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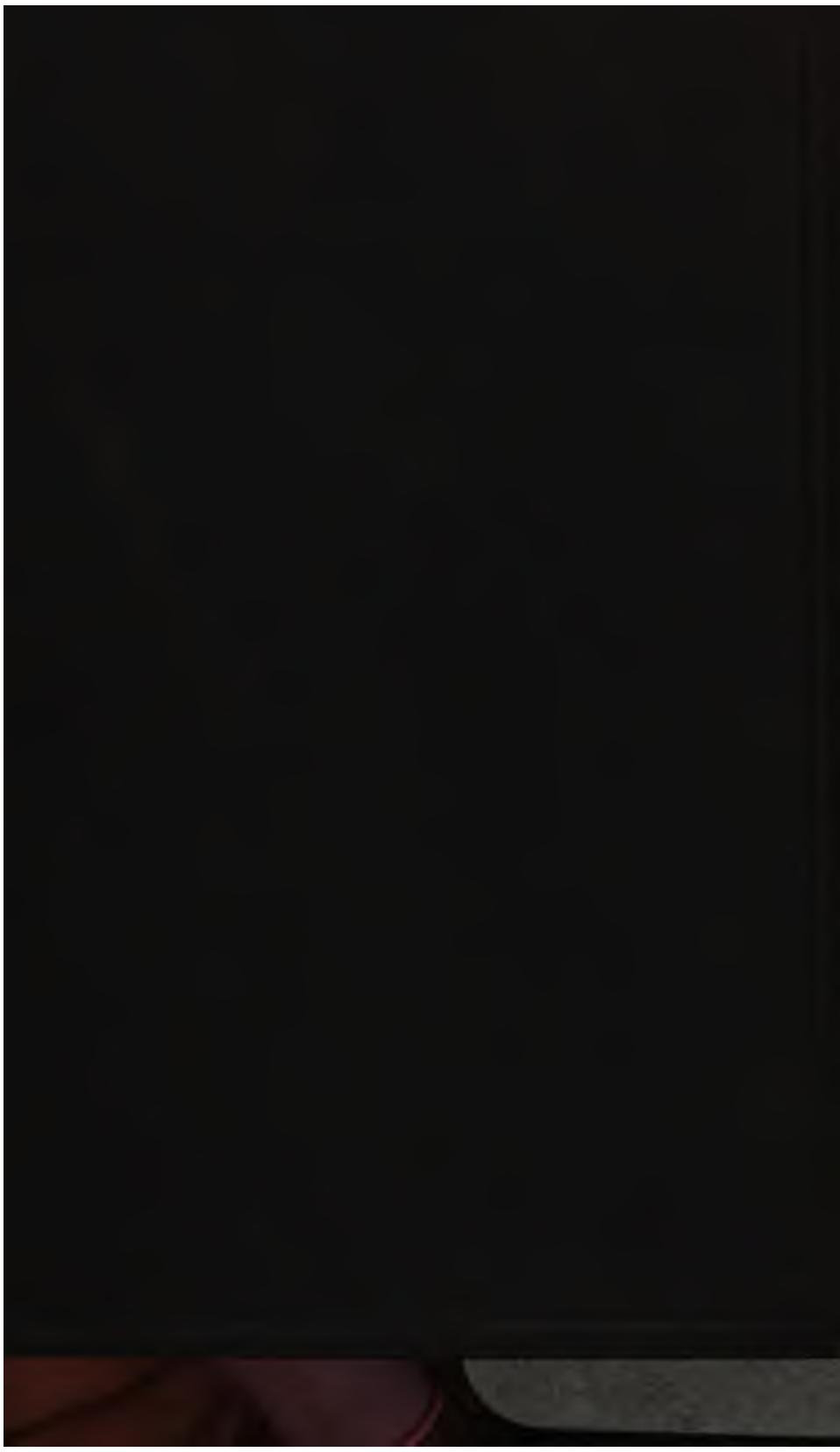
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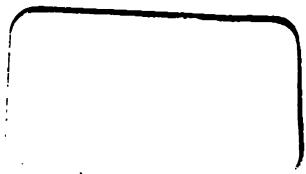
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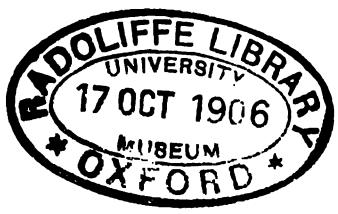
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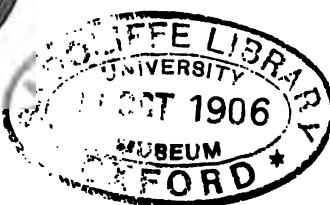
PROCEEDINGS  
OF  
THE MEDICAL SOCIETY  
OF  
LONDON.

VOLUME THE SIXTH.



EDITED BY

ISAMBARD OWEN, M.D.,  
AND  
ALFRED PEARCE GOULD, M.S.



LONDON:  
PRINTED FOR THE SOCIETY BY J. E. ADLARD, BARTHOLOMEW CLOSE.  
1884.



## ADVERTISEMENT.

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THE present volume comprises the Proceedings of the Society during its One hundred and ninth and One hundred and tenth Sessions, viz. from October the 17th, 1881, to July the 2nd, 1883.

The communications are published irrespective of their having appeared in print elsewhere; it is therefore believed that the value of the volume, as a record of work done by the Society, will be enhanced. The Council deems it right to state that the authors of the various communications and remarks alone are responsible for the opinions with which their names are respectively associated.



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**"ON THE DEGENERATIVE CHANGES AFFECTING THE CEREBRO-  
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1878 BARKER, FORDYCE, M.D., 85, Madison-avenue, New York, Professor of Clinical Midwifery and Diseases of Women at the Bellevue Hospital Medical College.  
1876 BARNES, J. M., M.D., Surgeon-General U.S. Army, Washington.  
1887 BENNETT, SIR JAMES RISDON, LL.D., M.D., F.R.S., 22, Cavendish-square, W., late President of the Royal College of Physicians; Consulting Physician to St. Thomas's Hospital and to the Victoria-park Hospital. P 2, VP 2, C 7, O, 8 3, FM.  
1881 BILLINGS, JOHN S., M.D., Washington, Surgeon to the United States Army; Librarian of the Surgeon-General's Library, Washington.  
1881 BIGELOW, HENRY J., M.D., 52, Beacon Street, Boston, U.S.A., late Professor of Surgery at the University of Harvard.  
1881 BILLROTH, THEODORE, M.D., Professor of Surgery, University of Vienna.  
1873 BURROWS, SIR GEORGE, Bart., M.D., F.R.S., 18, Cavendish-square, W., Physician to in Ordinary H.M. the Queen; late President of the Royal College of Physicians; Consulting Physician to St. Bartholomew's Hospital.  
1881 CHARCOT, Professor J. M., M.D., 17, Quai Malaquais, Paris.  
1873 CHAUVEAU, Professor, Lyons.  
1881 DA COSTA, J. M., M.D., Professor of Medicine in the Jefferson Medical College, Philadelphia.  
1881 EMMET, THOMAS ADDIS, M.D., Surgeon to the Woman's Hospital of the State of New York.  
1873 FARRE, ARTHUR, M.D., F.R.S., 18, Albert Mansions, S.W., Physician-Extraordinary to H.M. the Queen; Physician-Accoucheur to H.R.H. the Princess of Wales and H.I.R.H. the Duchess of Edinburgh.  
1876 FLINT, AUSTIN, M.D., Professor of Medicine in the Bellevue Hospital Medical College, New York, U.S.A.  
1876 GROSS, SAMUEL D., M.D., late Professor of Surgery in the Jefferson Medical College of Philadelphia, U.S.A.  
1873 GUENEAU DE MUSSY, NOËL, M.D., No. 4, Rue St. Arnaud, Paris, Member of the Academy of Medicine; Physician to the Hôtel Dieu.  
1881 HALLA, JOSEPH, Professor of Medicine in the University of Prague.

XXVIII

- 1869 HARE, CHARLES JOHN, M.D., Manchester-square, W., Emeritus Professor of Clinical Medicine in University College; Consulting Physician to University College Hospital. P, VP 2, C 8, LL. (*Trustees.*)
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- 1873 HUXLEY, THOMAS HENRY, LL.D., Pres. R.S., 4, Marlborough-place, St. John's Wood, N.W., Professor of Biology in the Normal School of Science, and in the Royal School of Mines.
- 1875 JENNEE, Sir WILLIAM, Bart., K.C.B., D.C.L., LL.D., M.D., F.R.S., 63, Brook-street, W., Physician-in-Ordinary to H.M. the Queen and to H.R.H. the Prince of Wales; President of the Royal College of Physicians; Emeritus Professor of Clinical Medicine in University College, London; Consulting Physician to University College Hospital.
- 1843 JOHNSTONE, HENRY JAMES WOLFENDEN, High View, St. Lawrence, Thanet, formerly Senior Assistant Surgeon and Lecturer on Anatomy and Physiology, St. George's Hospital.
- 1873 LANGENBECK, BERNHARD VON, M.D., late Professor of Surgery in the University of Berlin.
- 1884 LABBEY, Baron, M.D., Paris.
- 1883 LE ROY DE MÉRICOUET, A., M.D., Paris.
- 1876 MERCIER, LOUIS AUGUSTE, M.D., Paris.
- 1832 MITCHELL, S. WEIR, M.D., Walnut-street, Philadelphia.
- 1881 NUSSBAUM, JOHN NEPOMUK RITTER VON, M.D., Professor of Surgery in the University of Munich.
- 1875 OLLIER, Professor, Lyons.
- 1873 OWEN, Sir RICHARD, K.C.B., F.R.S., Sheen Lodge, Richmond Park, Superintendent of the Natural History Departments of the British Museum.
- 1873 PAGET, Sir JAMES, Bart., D.C.L., LL.D., F.R.S., 1, Harewood-place, Hanover-square, W., Serjeant-Surgeon to H.M. the Queen; Surgeon to H.R.H. the Prince of Wales; Consulting Surgeon to St. Bartholomew's Hospital.
- 1883 PAGET, GEORGE EDWARD, D.C.L., L.L.D., M.D., F.R.S., Regius Professor of Physic in the University of Cambridge.
- 1876 PANCOAST, JOSEPH, M.D., 1030, Chestnut-street, Philadelphia, Professor of Anatomy in the Jefferson Medical College.
- 1887 QUAIN, RICHARD, F.R.S., 32, Cavendish-square, W., Surgeon-Extraordinary to the Queen; Emeritus Professor of Clinical Surgery in University College, and Consulting Surgeon to University College Hospital. VP, C.

XXIX

- 1877 SANNE, A., 11, Rue Cambacérès, Paris.
- 1873 SCANZONI, FRIEDRICH WILHELM VON, M.D., Royal Bavarian Privy Councillor, and Professor of Medicine in the University of Wurzburg.
- 1835 SEAONE, M., M.D., Salamanca.
- 1835 SMITH, JOHN GREGORY, F.R.C.S., 23, Gloucester-place, Greenwich, S.E. VP, C 4.
- 1881 TARNIER, STEPHANIE, M.D., Professor of Obstetric Medicine in the School of Medicine, Paris.
- 1873 TYNDALL, JOHN, F.R.S., Professor of Natural Philosophy in the Royal Institution.
- 1881 VERNEUIL, AUGUSTE ARISTIDE, M.D., Professor of Medicine in the School of Medicine, Paris.
- 1873 VIRCHOW, RUDOLPH, M.D., Professor of Pathological Anatomy in the University of Berlin.
- 1881 VOLKMANN, RICHARD, M.D., Professor of Surgery in the University of Halle.
- 1838 WILLIAMS, CHARLES JAMES BLASIUS, M.D., F.R.S., 47, Upper Brook-street, W., Physician-Extraordinary to H.M. the Queen; Emeritus Professor of Medicine and Clinical Medicine in University College; Consulting Physician to University College Hospital and to the Brompton Hospital for Consumption.
- 1883 YANDELL, DAVID, M.D., Professor of Surgery in the Louisville University, Kentucky, U.S.A.

CORRESPONDING FELLOWS.

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- 1851 ALBATO, J. MENDEZ, Madrid.  
 1861 ALVARENGA, PEDRO FRANCISCO DA COSTA, M.D., Lisbon.  
 1882 BADALONI, GIUSEPPE, M.D., Frosinone, Prov. di Roma, Italy.  
 1856 BAKEE, ALBERT, M.D., Dawlish, Devonshire.  
 1855 BEARDSLEY, AMOS, Bay Villa, Grange, Lancashire.  
 1850 BENAVENTE, MARIANO, Madrid.  
 BENEKE, F. W., M.D., New York.  
 1850 BÖHM, PROFESSOR, M.D., Vienna.  
 BOTTANI, GIUSEPPE, M.D., Milan.  
 1865 BRAUN, CARL, M.D., Professor of Midwifery in the University of Vienna.  
 1887 BÜHRING, J. J., M.D., Berlin.  
 1874 BURNES, ALEXANDER GEORGE, M.D., Port Elizabeth, Cape of Good Hope.  
     CADE, THOMAS CHARLES, Spondon, Derby.  
 1855 CLARK, ALFRED, Twickenham.  
 1855 COATES, CHARLES, M.D., F.R.C.P., 10, Circus, Bath, Consulting Physician to the Bath Royal United Hospital. c 3.  
 1850 COX, WILLIAM ISIDORE, Hawkesbury Upton, Gloucestershire. C.  
 CURTIS, GEORGE, Dorking.  
 1876 DAWES, RICHARD ST. MARK, Gawler, South Australia.  
     DE MUYNCK, J., M.D., Ghent.  
 1865 DIDAY, PAUL, M.D., Lyons.  
 1886 ECSTEIN, SIGISMUND, M.D., Vienna.  
     EYLANDT, JOHANN EMIL, M.D., Curland, Russia.  
 1853 FALLOT, R., M.D., St. Laurant d'Aigouze, Montpelier, France  
 1884 FIDELI, G., M.D., Rome.  
 1876 GRIFFITH, RICHARD GLYN, Dinapore, India.  
 1884 HASENFELD, EMMANUEL, M.D., Pesth.  
 1867 HUGHES, JOHN STANNUS, M.D., Dublin, Professor of Surgery in the Royal College of Surgeons of Ireland.  
     HYMAN, —, M.D., Antwerp.  
 1851 IZQUIERDO, SEBASTIAN OBTEGA, Madrid.  
 1875 JONES, PHILIP SYDNEY, M.D., F.R.C.S., Examiner in Medicine in the University of Sydney, Australia, Hon. Consulting Surgeon to the Sydney Infirmary.

XXXI

- 1861 JOURNEZ, HENRI, M.D., 48, Rue de la Charité, Bruxelles, Belgique.  
1852 JUNOD, THEODORE, M.D., Geneva.  
KITCHING, GEORGE, M.D., Enfield.  
1851 KÖLLIKER, ALBERT, M.D., Professor of Anatomy and Physiology at the  
University of Wurzburg.  
LAX, WILLIAM, Ormskirk, Lancashire.  
1876 LEIGHTON, WALTER H., M.D., Lowell, Massachusetts, U.S.  
LEON, JOSE, Madrid.  
1851 LLANOS, ANTONIO CAMPO, Madrid.  
LOVERA, JOSE, Madrid.  
MARINO, BONIFACIO MATREOS, Madrid.  
MENDEZ, BARTHOLOME, Madrid.  
MOLINA, M. M., Madrid.  
NEGRI, GAETANO, M.D., Pisa.  
ORTEGA, J. R., Madrid.  
1865 PERUZZI, DOMENICO, M.D., Sinegaglia.  
1882 RESTREPO, ALESSANDRO EDUARDO, M.D., Medillin, Columbia, U.S.A.  
1860 ROUSSEL, M.D., Dean of the Faculty of Medicine, Montpelier.  
SCHARLA, GUS. W., M.D., Stettin, Prussia.  
1876 SCHMITZ, RICHARD, M.D., Neuenahr.  
1874 SCHUTGOWSKY, J., St. Petersburg.  
1852 SEATON, JOSEPH, M.D., Halliford House, Sunbury.  
1851 SESSE, M., Mesqui, Madrid.  
STOCKWELL, THOMAS GOLDESBOUGH, F.R.C.S., 9, Alfred-street, Bath,  
Surgeon to the Bath Royal United Hospital.  
TERZA, FELIX GARCIA, Madrid.  
VALDEZ, FRANCO CORTIGO, Madrid.  
WILLIAMS, CHARLES, F.R.C.S. Edin., 9, Prince of Wales-road, Norwich ;  
Surgeon to the Norfolk and Norwich Hospital.  
WILSON, CHARLES, M.D., Dalrymple-crescent, Grange, Edinburgh.

THE FELLOWS  
OF  
THE MEDICAL SOCIETY OF LONDON.

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EXPLANATION OF ABBREVIATIONS.

P.—PRESIDENT.	LL.—LETSOMIAN LECTURER.
VP.—VICE-PRESIDENT.	FM.—FOTHERGILLIAN GOLD MEDALLIST.
T.—TREASURER.	SM.—SILVER MEDALLIST.
L.—LIBRARIAN.	O.—OERATOR.
S.—SECRETARY.	§—SEC. FOR FOREIGN CORRESPONDENCE.
C.—COUNCILLOR.	*—LIFE MEMBERS.

NS.—NON-SUBSCRIBING.

The number prefixed signifies the date of election. The figures appended indicate the number of Sessions served, and refer to past appointments ONLY.

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- 1883 ACLAND, THEODORE DYKE, M.A., M.B., 79, Lambeth Palace-road, S.E., Demonstrator of Practical Physiology and Morbid Histology at St. Thomas's Hospital.
- 1878 ADAMS, JOSIAH OAKE, M.D., F.R.C.S., Brook House, Upper Clapton, E.
- 1852 \*ADAMS, WILLIAM, F.R.C.S., 5, Henrietta-street, Cavendish-square, W., Surgeon to the Great Northern Hospital. e, o 8, o, vp 3, LL.
- 1868AITKEN, WILLIAM, M.D., F.R.S., Woolston, Southampton, Professor of Pathology, Army Medical School, Netley. ns.
- 1872 ALDRED, HENRY ALLEN, M.D., 4, Westbourne-park, W.
- 1878 ALLCHIN, WILLIAM HENRY, M.B., F.R.C.P., F.R.S.E., 5, Chandos-street, Cavendish-square, W., Physician to, and Lecturer on Medicine at, Westminster Hospital. Librarian.
- 1873 ALLEN, HENRY MARCUS, F.R.C.P. Edin., 20, Regency-square, Brighton.
- 1873 ALLFREY, CHARLES HENRY, M.D., F.R.C.S., Sanit. Sci. Certif. Camb., St. Mary Cray, Kent.
- 1883 ALLINGHAM, HERBERT, W., 25, Grosvenor-street, W.
- 1872 ALLINGHAM, WILLIAM, F.R.C.S., 25, Grosvenor-street, Grosvenor-square, W., Surgeon to St. Mark's Hospital. c.
- 1860 ALTHAUS, JULIUS, M.D., M.R.C.P., Knt. Ord. Crown of Italy, 48, Harley-street, W., Senior Physician to the Hospital for Epilepsy and Paralysis, Regent's Park. c 5, §.

- 1871 AMBLER, VINCENT, Colville House, Colville-square, Bayswater, W.  
 1869 ARMITAGE, SAMUEL HARRIS TATHAM, M.D., 23, Brook-street, W.  
 1868 ARMSTRONG, JOHN, M.D., Dartford, Kent.  
 1868 ARMSTRONG, JOHN CHRISTOPHER, 196, Parrock-street, Gravesend. NS.  
 1871 ARNOLD, WILBERFORCE, J.P., Crescent House, Belfast, Physician to the Rescue Hospital, Belfast. NS.  
 1882 ASHTON, CHARLES ERNEST, General Hospital, Wolverhampton.  
 1873 ATKINSON, EDWARD, 36, Albion-street, Leeds, Surgeon to the Leeds General Infirmary; Lecturer on Surgery in the Leeds School of Medicine.  
 1872 AVELING, JAMES HOBSON, M.D., 1, Upper Wimpole-street, W., Senior Physician to the Chelsea Hospital for Women.  
  
 1873 BAGSHAWE, FREDERIC, M.A., M.D., F.R.C.P., 5, Warrior-square, St. Leonards, Physician to the East Sussex Infirmary.  
 1871 BAILEY, GEORGE HEWLETT, 9, Cavendish-place, W., Chloroformist to the Charing Cross Hospital and to the Dental Hospital.  
 1873 BAILEY, JAMES JOHNSON, M.D., Marple, Cheshire.  
 1878 BAKER, HENRY FRANCIS, F.R.C.S. Edin., 15, Hanover-square, W. Connillor.  
 1878 BALDOCK, ALFRED, M.B., C.M., 180, Earl's Court-road, S.W.  
 1879 BALKWILL, WILLIAM EDWARD, 9, Old Cavendish-street, Cavendish-square, W., Surgeon to the Royal Orthopaedic Hospital.  
 1881 BALLANCE, CHARLES ALFRED, M.B., M.S., F.R.C.S., 56, Harley-street, W., Assistant Surgeon to the West London Hospital; Demonstrator of Anatomy at St. Thomas' Hospital.  
 1859 BARNES, JOHN WICKHAM, F.R.C.S., 3, Bolt-court, E.C. VP, c 8, s 2.  
 1883 BARNES, ROBERT, M.D., F.R.C.P., 15, Harley-street, W., Obstetric Physician to, and Lecturer on, Midwifery and Diseases of Women at St. George's Hospital.  
 1876 BARNES, ROBERT SYDENHAM FANCOURT, M.D., C.M., M.R.C.P., 7, Queen Anne-street, W., Physician to the Chelsea Hospital for Women; Physician to the British Lying-in Hospital; Assistant Obstetric Physician to the Great Northern Hospital. C.  
 1874 BARRETT, HOWARD, 3, Tavistock-square, W.C.  
 1868 BATEMAN, FREDERIC, M.D., F.R.C.P., J.P., Upper St. Giles-street, Norwich, Physician to the Norwich and Norfolk Hospital. NS.  
 1882 BEACH, FLETCHER, M.B., M.R.C.P., Medical Superintendent to Darent Asylum, Dartford, Kent.  
 1868 BEATTY, THOMAS CARLYLE, Seaham Harbour, Durham. NS.  
 1880 BEEVOR, CHARLES EDWARD, M.D., M.R.C.P., 129, Harley-street, W., Assistant Physician to the National Hospital for the Paralysed and Epileptic.  
 1868 BELL, The Rev. DAVID, M.A., M.D., C.M., Goole, Yorkshire. c 3.  
 1867 BELL, HUTCHINSON ROYES, F.R.C.S., 12, Queen Anne-street, W., Surgeon to, and Demonstrator of Operative Surgery at, King's College Hospital. VP, c 8, LS, LL, SM.

- 1872 BELL, JOHN HOUGHAM, M.D., Downside, Ventnor, Isle of Wight. ns.
- 1881 BENNET, ROBERT, M.D., Tankerville House, Park-place, Buxton, Senior Physician to the Devonshire Hospital; Coroner for High and Low Peak.
- 1883 BENNETT, WILLIAM HENRY, F.R.C.S., 1, Chesterfield-street, Mayfair, W., Assistant Surgeon to, and Lecturer on Anatomy at, St. George's Hospital.
- 1878 BENTON, SAMUEL, 2, Bennett-street, St. James, S.W.; Surgeon to the North West London Hospital. *Councillor.*
- 1878 BEVERIDGE, JAMES SPOWART, M.R.C.P. Edin., 8, Eildon-street, Edinburgh.
- 1879 BINDON, WILLIAM JOHN VEREKER, M.D., D.Sc., C.M., *Travelling.*
- 1868 BIRD, GEORGE, M.D., 49, Welbeck-street.
- 1850 \*BIRKETT, JOHN, F.R.C.S., 59, Green-street, Grosvenor-square, W., Consulting Surgeon to Guy's Hospital. VP, c 6.
- 1883 BISS, CECIL YATES, M.A., M.B., M.R.C.P., 65, Harley-street, W., Assistant Physician to the Middlesex Hospital, and to the Hospital for Consumption, Brompton; Lecturer on Botany at the Middlesex Hospital.
- 1881 BLACK, JAMES, B.A., F.R.C.S., 16, Wimpole-street, W., Lecturer on Anatomy to the Westminster Hospital.
- 1881 BLAKEE, WALTER CAMPBELL, Lyndhurst, Hants.
- 1868 BLOWEE, WILLIAM, Bedford. ns.
- 1871 BLOXAM, JOHN ASTLEY, F.R.C.S., 8, George-street, Hanover-square, W., Surgeon to the Charing Cross Hospital, and to the Lock Hospital. s 2, c 2.
- 1867 BOND, THOMAS, M.B., B.S., F.R.C.S., 7, The Sanctuary, Westminster, S.W., Assistant Surgeon to, and Lecturer on Forensic Medicine at, Westminster Hospital.
- 1871 BOTHWELL, GEORGE GRANVILLE, Topsham, Devon.
- 1879 BOTT, HENRY, Brentford.
- 1872 BOULTON, PERCY, M.D., M.R.C.P., 6, Seymour-street, Portman-square, W., Physician to the Samaritan Hospital. c.
- 1883 BRADSHAW, JAMES DIXON, M.A., M.B., M.R.C.P., 30, George-street, Hanover-square, W.
- 1868 BRADY, JOHN, D.L., M.R.C.P., Hon. F.R.C.S.I., Bridport House, Rugby.
- 1868 BRAIDWOOD, PETER MURRAY, M.D., 2, Delamere-terrace, Birkenhead, Examiner in the University of Edinburgh. FM 1877, ns.
- 1869 BRAINE, FRANCIS WOODHOUSE, F.R.C.S., 56, Maddox-street, W., Lecturer on Anæsthetics to Charing Cross Hospital. VP 2, s 2, c 3, sm.
- 1876 BREWER, ALEXANDER HAMPTON, 136, Richmond-road, Dalston, E.
- 1873 BRIDGWATER, THOMAS, M.B., Harrow.
- 1862 BROADBENT, WILLIAM HENRY, M.D., F.R.C.P., 34, Seymour-street, Portman-square, W., Physician to, and Lecturer on Medicine at, St. Mary's Hospital. F, VP, O, LL, C 4.
- 1879 BROOKFIELD, JOHN STORES, B.A., M.D., 2, Devonshire Villas, Brondesbury, N.W.

- 1878 BROOKS, JOSEPH EDWIN, 54, Mill-street, Ludlow, Salop.
- 1878 BROWN, ANDREW, M.D., Elton-villa, 1, Bartholomew-road, Kentish Town, N.W.
- 1882 BROWN, ALEXANDER STEWART, St. Mary's Hospital, W.
- 1871 BROWN, JOHN, Belmont Lodge, St. John's-hill, New Wandsworth, S.W.
- 1871 BROWNE, JAMES Crichton, LL.D., M.D., F.E.S., 7, Cumberland-terrace, Regent's-park, N.W., Lord Chancellor's Visitor. c.
- 1873 BROWNE, LENNOX, 36, Weymouth-street, W., Senior Surgeon to the Central London Throat and Ear Hospital.
- 1873 BRUNJES, MARTIN, 27, Edgware Road, W.
- 1861 BRUNTON, JOHN, M.A., M.D., 21, Euston-road, N.W., Examiner in Midwifery and Forensic Medicine in the University of Glasgow; Surgeon to the Royal Maternity Charity. c, 2, *Vice-President*.
- 1874 BRUNTON, THOMAS LAUDER, M.D., D.Sc., F.R.C.P., F.R.S., 50, Welbeck-street, W., Assistant Physician to, and Lecturer on *Materia Medica* at, St. Bartholomew's Hospital; Examiner in *Materia Medica* in the University of London.
- 1850 BRYANT, THOMAS, F.R.C.S., 53, Upper Brook-street, W., Surgeon to, and Lecturer on Surgery at, Guy's Hospital. p, VP 2, LL, s 2, c 4. *Trustee*.
- 1848 BRYANT, WALTER JOHN, F.R.C.S., 23A, Sussex-square, W.
- 1858 BUCHANAN, GEORGE, M.D., F.R.C.P., F.R.S., 24, Nottingham-place, W.; Medical Officer to the Local Government Board. p, LL, VP, o, c 3.
- 1868 BUCKLE, FLEETWOOD, M.D., Staff Surgeon R.N. ns.
- 1877 BUCKNILL, JOHN CHARLES, M.D., F.R.C.P., F.R.S., J.P., The Albany, Piccadilly, W. c 3.
- 1883 BULL, WILLIAM HENRY, St. Oswald's House, Stony Stratford.
- 1873 BUNNY, JOSEPH, M.D., Newbury, Berks.
- 1872 BURGER, ALEXANDER, M.D., 49, Finsbury Square, E.C., Honorary Surgeon to the German Hospital.
- 1850 BURNIE, WILLIAM, M.D., Houghton House, Bradford. ns.
- 1872 BYAS, EDWARD HEGLEY, Grove Hall, Bow.
- 1850 \*CAMPBELL, WILLIAM, M.D., F.R.C.S., 53, Radnor-street, Chelsea, S.W. c 5.
- 1839 CANTON, EDWIN, F.R.C.S., 30, Montague-place, Russell-square, W.C., Consulting Surgeon to Charing Cross Hospital. p, VP 2, o, s, c 6; FM 1857.
- 1869 CARPENTER, ALFRED, M.D., J.P., 5, Grosvenor-street, W. o, c 3.
- 1882 CARPENTER, ARTHUR BRISTOWE, M.A., M.B., Croydon.
- 1871 CARTER, ROBERT BRUDENELL, F.R.C.S., 27, Queen Anne-street, W., Ophthalmic Surgeon to, and Lecturer on Ophthalmic Surgery at, St. George's Hospital. VP, o. *Lettomanian Lecturer*.
- 1848 CARTWRIGHT, SAMUEL, F.R.C.S., 32, Old Burlington-street, W., late Professor of Dental Surgery in King's College; Consulting Surgeon to the Dental Hospital.

XXXVI

- 1876 CAETWEIGHT, S. HAMILTON, 32, Old Burlington-street, W., Professor of Dental Surgery in King's College and Dental Surgeon to the Hospital.
1881. CASE, PERKINS WILLIAM PERKINS, M.B., C.M., Whitechapel Union Infirmary, Baker's-row, E.
- 1878 CASSIDY, JOSEPH LAMONT, M.D., 82, Guildford-street, W.C., Assistant Physician to the Hospital for Consumption, Hampstead.
- 1876 CATHCART, SAMUEL, M.R.C.P. Edin., Prudhoe House, High-road, Tottenham, E.
- 1882 CAVAFY, JOHN, M.D., F.R.C.P., 2, Upper Berkeley-street, W., Physician to St. George's Hospital.
- 1867 CHAPMAN, JOHN, M.D., 224, Rue de Rivoli, Paris.
- 1868 CHESSALL, WILLIAM, M.D., Horley, Surrey. NS.
- 1868 CHILD, EDWIN, New Malden, Surrey. NS.
- 1877 \*CHISHOLM, EDWIN, M.D., Sydney, New South Wales.
- 1861 CHOLMELEY, WILLIAM, M.D., F.R.C.P., 63, Grosvenor-street, W., Senior Physician to the Great Northern Hospital. VP, O, C 5, SM.
- 1870 CHRISTIE, THOMAS BEATH, M.D., F.R.C.P., F.R.S.E., Medical Superintendent, Royal India Asylum, Ealing, W.
- 1871 CHURTON, THOMAS, M.D., 35, Park-square, Leeds, Physician to the Leeds General Infirmary, and Lecturer on Clinical Medicine and Materia Medica in the Leeds School of Medicine.
- 1854 CLARK, Sir ANDREW, Bart., LL.D., M.D., F.R.C.P., 16, Cavendish-square, W., Physician to, and Lecturer on Clinical Medicine at, the London Hospital. P, VP, LL, C 5, § 6.
- 1875 CLARK, ANDREW, F.R.C.S., 19, Cavendish-place, W., Assistant Surgeon to, and Lecturer on Practical Surgery at, the Middlesex Hospital.
- 1883 CLARK, WILLIAM BRUCE, M.A., M.B., F.R.C.S., 46, Harley-street, W., Assistant Surgeon to the West London Hospital and Demonstrator of Anatomy at St. Bartholomew's Hospital.
- 1873 CLARKE, THOMAS KILNER, M.A., M.D., F.R.C.S., 66, John William-street, Huddersfield, Surgeon to the Huddersfield Infirmary.
- 1870 CLOUSTON, THOMAS SMITH, M.D., Superintendent Royal Asylum, Morning-side, Edinburgh; Lecturer on Mental Diseases in the University of Edinburgh. FM. 1870. NS.
- 1873 CLUBBE, WILLIAM HENCHMAN, Grove House, Lowestoft, Surgeon to the Lowestoft Infirmary.
- 1879 CLUTTON, HENRY HUGH, M.A., M.B., F.R.C.S., 77, Lambeth Palace-road, Albert Embankment, S.E., Assistant Surgeon and Aural Surgeon and Lecturer on Forensic Medicine to St. Thomas' Hospital.
- 1869 COATES, WILLIAM MARTIN, F.R.C.S., Salisbury, Surgeon to the Salisbury Infirmary.
- 1849 COCKLE, JOHN, M.A., M.D., F.R.C.P., F.R.C.S., 13, Spring-gardens, S.W., Senior Physician to the Royal Free Hospital. P, VP, O, L 8, C 3, SM.
- 1848 COGSWELL, CHARLES, M.D., F.L.S., 47, York-terrace, Regent's-park, N.W. S 4. Trustee.

XXXVII

- 1872 COLES, J. OAKLEY, 18, Wimpole-street, W., Lecturer on Dental Surgery at the National Dental College; Dental Surgeon to the National Dental Hospital.
- 1853 COLLAMBELL, CHARLES, F.R.C.S., J.P., The Terrace, 148, Lambeth-road, S.E.
- 1883 COMPTON, FRANCIS CHARLES, 38, Hans-place, Sloane-square, S.W., Microscopical Pathologist and Lecturer on Histology at St. George's Hospital.
- 1871 COOK, JOHN, M.D., 1, Nottingham-terrace, Regent's-park, N.W., Physician to the Great Northern Hospital.
- 1862 COOPER, ALFRED, F.R.C.S., 9, Henrietta-street, Cavendish-square, W., Senior Surgeon to the West London Hospital and Surgeon to the Lock Hospital. c 8. *Vice-President.*
- 1873 COOPER, Sir HENRY, M.D., F.R.C.P., F.R.C.S., 5, The Avenue, Upper Norwood, S.E., Consulting Physician to the Hull General Infirmary. c 2.
- 1872 CORFIELD, WILLIAM HENRY, M.A., M.D., F.R.C.P., 10, Bolton-row, Mayfair, Professor of Hygiene in University College; Medical Officer of Health for St. George's, Hanover-square. c.
- 1861 COULSON, WALTER JOHN, F.R.C.S., 17, Harley-street, W., Senior Surgeon to the Lock Hospital and to St. Peter's Hospital. o, s 2, c 4.
- 1879 COUPLAND, SIDNEY, M.D., F.R.C.P., 14, Weymouth-street, W., Physician to, and Lecturer on Pathological Anatomy at, the Middlesex Hospital; Examiner in Pathology in the University of Edinburgh. *Councillor.*
- 1883 COXWELL, CHARLES FILLINGHAM, M.A., M.B., M.R.C.P., Medical Registrar to the London Hospital; Assistant Physician to the Royal Hospital for Diseases of the Chest.
- 1874 CRAIGIE, JOHN HAMILTON, 18, Savile-row, W., Surgeon Dentist to the Chelsea Hospital for Women. *Councillor.*
- 1873 CRAVEN, ROBERT MARTIN, J.P., 14, Albion-street, Hull, Surgeon to the Hull General Infirmary.
- 1881 CRIPPS, WILLIAM HARRISON, F.R.C.S., 2, Stratford-place, W., Assistant Surgeon and Surgical Registrar to St. Bartholomew's Hospital.
- 1880 CRITCHETT, GEORGE ANDERSON, M.A., 21, Harley-street, W., Ophthalmic Surgeon, and Lecturer on Ophthalmic Surgery, to St. Mary's Hospital.
- 1880 CROCKER, HENRY RADCLIFFE, M.D., B.S., M.R.C.P., 28, Welbeck-street, W., Physician to the Skin Department at University College Hospital. *Councillor.*
- 1881 CROSS, FRANCIS RICHARDSON, M.B., F.R.C.S., Chandos Vills, Clifton, Bristol, Surgeon to the Bristol Royal Infirmary; Lecturer on Anatomy in the Bristol Medical School.
- 1855 CROSS, ROBERT, M.D., 42, Craven-street, Strand, W.
- 1881 CULLIMORE, DANIEL HENRY, M.D., F.R.C.S.I., 27, Welbeck-street, W., Senior Physician to the North-West London Hospital.
- 1874 CUMBERBATCH, ALPHONSE ELKIN, M.B., F.R.C.S., 17, Queen Anne-street, W., Aural Surgeon to St. Bartholomew's Hospital. c 2.

XXXVIII

- 1871 DALBY, WILLIAM BARTLETT, B.A., M.B., F.R.C.S., 18, Savile-row, W., Aural Surgeon to, and Lecturer on Aural Surgery at, St. George's Hospital. c.
- 1864 DALE, GEORGE CORNELIUS, M.D., F.R.C.S., Ivy Lodge, Upper Tooting, S.W.
- 1881 DALLAWAY, DENNIS JOSEPH WILLIAM, Salisbury Club, St. James'-square, S.W.
- 1873 DALY, OWEN, M.D., F.R.C.P., J.P., 28, Albion-street, Hull, Physician to the Hull General Infirmary.
- 1890 DAWSON, SMITH HOUSTON, M.D., Campden Villa, 203, Maida-vale, W.
- 1868 DAVY, RICHARD, M.B., F.R.C.S., F.R.S.E., 33, Welbeck-street, W., Surgeon to, and Lecturer on Practical Surgery at, the Westminster Hospital. VP, § 2, SM, § 2.
- 1880 DAWSON, YELVERTON, M.D., 28, Hyde-park-street, W.
- 1892 DAY, EDWARD JOSEPH, Dorchester.
- 1867 DAY, WILLIAM HENRY, M.D., M.R.C.P., 10, Manchester-square, W., Physician to the Samaritan Free Hospital. c 3. *Councillor.*
- 1883 DENT, CLINTON THOMAS, F.R.C.S., 19, Savile-row, W., Assistant Surgeon to, and Lecturer on Practical Surgery at, St. Thomas's Hospital.
- 1879 DEWAR, JOHN, 132, Sloane-street, S.W.
- 1844 \*DIAMOND, HUGH WELCH, Twickenham House, Twickenham, Middlesex.
- 1881 DICKSON, FRANCIS KENNEDY, F.R.C.P. Edin., Wye House Lunatic Asylum, Buxton, Derbyshire.
- 1882 DOLAN, THOMAS MICHAEL, 1882, Horton House, Halifax. FM 1882.
- 1881 DOBAN, ALBAN HENRY GRIFFITHS, F.R.C.S., 51, Seymour-street, Portman-square, W., Surgeon to Out Patients at the Samaritan Free Hospital.
- 1872 DOWN, JOHN LANGDON HAYDON, M.D., F.R.C.P., 81, Harley-street, W., Physician to, and Lecturer on Clinical Medicine at, the London Hospital.
- 1871 DOWSE, THOMAS STRETCH, M.D., 14, Welbeck-street, W., Physician to the North London Hospital for Consumption. s, c 3.
- 1877 DREW, JOHN HENRY, 2, Cambridge-terrace, Hyde-park, W., Consulting Surgeon to the Metropolitan Ear and Throat Infirmary. *Councillor.*
- 1881 DREWITT, FREDEBIC GEORGE DAWTRY, M.A., M.D., M.R.C.P., 52, Brook-street, W., Assistant Physician to the West Loudon Hospital, and to the Victoria Hospital for Children.
- 1874 DREYSDALE, CHARLES ROBERT, M.D., M.R.C.P., 65, Regent-street, W.C., Senior Physician to the Metropolitan Free Hospital.
- 1874 DUNCAN, WILLIAM ARCEDECKNE, M.D., F.R.C.S., 29, Wimpole-street, W.
- 1848 DUNCAN, JAMES, M.B., 8, Henrietta-street, Covent-garden, W.C.
- 1878 DUNCAN, JAMES MATTHEWS, LL.D., M.D., F.R.C.P., F.R.S., 71, Brook-street, W., Physician-Accoucheur to, and Lecturer on Midwifery at, St. Bartholomew's Hospital.
- 1881 DUNCAN, JOHN THORNTON, Stamford, Lincolnshire.
- 1857 DUNN, ROBERT WILLIAM, 13, Surrey-street, Strand, W.C. c 3.
- 1873 DURANTY, E. NICHOLAS, M.D., Marseilles. NS.
- 1873 DURHAM, ARTHUR EDWARD, F.R.C.S., 82, Brook-street, W., Surgeon to, and Lecturer on Surgery at, Guy's Hospital. o, c.

XXXIX

- 1878 EDIS, ARTHUR WELLESLEY, M.D., F.R.C.P., 22, Wimpole-street, W., Assistant Obstetric Physician to, and Lecturer on Obstetric Medicine at, the Middlesex Hospital.
- 1860 EDMUNDS, JAMES, M.D., M.R.C.P., 8, Grafton-street, W., Senior Physician to the London Temperance Hospital; Medical Officer of Health and Public Analyst for St. James's, London.
- 1880 EDWARDS, FREDERICK SWINFORD, F.R.C.S., 93, Wimpole-street, W., Demonstrator of Anatomy and Operative Surgery at St. Bartholomew's Hospital; Surgeon to the West London Hospital.
- 1868 ELLIOTT, GEORGE FREDERICK, M.D., F.R.C.P., 3, Albion-street, Hull, Physician to the Hull General Infirmary.
- 1882 ELLIOTT, THOMAS, M.D., Monson-place, Tunbridge Wells.
- 1872 ELLIS, JAMES, Calcutta. NS.
- 1883 EMOND, E., Blanzy, Saône et Loire.
- 1883 ENGLISH, EDGAR, 1 Manor-road, Stoke Newington, N.
- 1880 ENGLISH, THOMAS JOHNSTON, M.D., 128, Fulham-road, S.W.
- 1883 EWART, JOSEPH, M.D., F.R.C.P., J.P., Montpellier Hall, Brighton, Retired Dep. Surgeon General, Bengal Army; late Principal, Professor of Medicine, and Senior Physician, Calcutta Medical College.
- 1877 EWART, WILLIAM, M.D. Cantab., F.R.C.P., 83, Curzon-street, Mayfair, W., Assistant Physician to, and Lecturer on Physiology at, St. George's Hospital. *Councillor.*
- 1869 FARQUHARSON, ROBERT, M.D., F.R.C.P., M.P., Reform Club, S.W. C.
- 1873 FAYRE, SIR JOSEPH, K.C.S.I., LL.D., M.D., F.R.C.P., F.R.C.S., F.R.S., 53, Wimpole-street, W., Honorary Physician to H.M. the Queen and to H.R.H. the Prince of Wales; Physician to H.R.H. the Duke of Edinburgh; Physician to the Secretary of State for India in Council; President of the Medical Board, India Office; Consulting Physician to Charing Cross Hospital. VP, LL, SM. *President.*
- 1884 FESTON, FREDERICK ENOS, Macquarie House, Ealing, W.
- 1878 FIELD, GEORGE PURDEY, 31, Lower Seymour-street, Portman-square, W., Aural Surgeon to, and Lecturer on Aural Surgery at, St. Mary's Hospital.
- 1883 FINLAY, DAVID WHITE, M.D., M.R.C.P., 21, Montagu-street, W., Assistant Physician to, and Lecturer on Forensic Medicine and Public Health at, the Middlesex Hospital.
- 1876 FISHER, FREDERIC RICHARD, F.R.C.S., 79, Grosvenor-street, W., Senior Surgeon to the National Orthopaedic Hospital.
- 1868 FLETCHER, THOMAS BELL ELCOCK, M.D., F.R.C.P., J.P., 43, Clarendon-square, Leamington, Consulting Physician to the Birmingham General Hospital. NS.
- 1868 FOLKEE, WILLIAM HENRY, F.R.C.S., Hanley, Staffordshire, Senior Surgeon to the North Stafford Infirmary. NS.
- 1878 \*FONMARTIN, HENRY DE, M.D., B.Sc., B.C.L., M.R.C.P., Knaphill, Woking, Surrey.

- 1869 FOSTER, BALTHAZAR, M.D., F.R.C.P., 14, Temple-row, Birmingham,  
Physician to the General Hospital, Birmingham; Professor of Physic  
in the Queen's College, Birmingham. ns.
- 1872 FOTHERGILL, JOHN MILNER, M.D., M.R.C.P., 110, Park-street, W.,  
Physician to the City of London Hospital for Diseases of the  
Chest. c.
- 1879 FOWLER, JAMES KINGSTON, M.D., M.R.C.P., 35, Clarges-street, Mayfair,  
W., Assistant Physician to the Middlesex Hospital, and to the Hospital  
for Consumption, Brompton. *Councilor.*
- 1873 FOX, ARTHUR EDWARD WELLINGTON, M.B., C.M., 16, Gay-street, Bath,  
Physician to the Royal United Hospital, Bath.
- 1868 FOX, CHARLES HENRY, M.D., Brislington House, near Bristol. ns.
- 1871 FOX, FRANCIS, 68, Wimpole-street, W.
- 1868 FOX, JOHN MAKINSON, The Grove, Lymm, Cheshire. ns.
- 1879 FOX, THOMAS COLCOTT, B.A., M.B., M.R.C.P., 14, Harley-street, W.,  
Physician in charge of the Skin Department, Westminster Hospital.
- 1868 FREE, ALFRED, J.P., Stourbridge. ns.
- 1883 GABBETT, HENRY SINGER, M.A., M.D., M.R.C.P., 57, Queen Anne-street,  
Cavendish-square, W.
- 1868 GAINES, CHARLES, 30, Gay-street, Bath, Dental Surgeon to the Royal  
United Hospital. ns.
- 1882 GAMGE, J. SAMPSION, F.R.S.E., 22, Broad-street, Birmingham, Con-  
sulting Surgeon to the Queen's Hospital, Birmingham.
- 1862 GANT, FREDERICK JAMES, F.R.C.S., 16, Connaught-square, W., Senior  
Surgeon to the Royal Free Hospital. r, vp 2, ll, o, c 3.
- 1882 GARDINER, GIDEON GEORGE, M.D., 47, Wimpole-street, W.
- 1847 GARROD, ALFRED BARING, M.D., F.R.C.P., F.R.S., 10, Harley-street,  
W., Consulting Physician to King's College Hospital. r, vp 2, ll,  
o, c 9.
- 1881 GAWITH, JAMES JACKSON, 23, Westbourne-park-terrace, W.
- 1849 GAY, JOHN, F.R.C.S., 34, Finsbury-pavement, E.C., Senior Surgeon to  
the Great Northern Hospital. r, vp, ll, o, c 3, t 6.
- 1873 GEE, ROBERT, M.D., M.R.C.P., 5, Abercromby-square, Liverpool, Con-  
sulting Physician to the Hospital for Diseases of the Chest,  
Liverpool.
- 1878 GELL, THOMAS SYLVESTER, M.D. Travelling.
- 1879 GIBBES, HENRAGE, M.D., C.M., 94, Gower-street, W.C., Lecturer on  
Physiology and Histology at the Westminster Hospital.
- 1856 GIBBON, SEPTIMUS, B.A., M.B., M.R.C.P., 39, Oxford-terrace, W., Medical  
Officer of Health, Holborn.
- 1882 GIBBONS, ROBERT ALEXANDER, M.D., C.M., M.R.C.P., 32, Cadogan-  
place, S.W.
- 1881 GIFFARD, DOUGLAS W., 5, Pavilion-parade, Brighton.
- 1883 GILBERT, PHILIP FRANCIS, Cripplegate Vicarage, E.C.

- 1867 GILL, WILLIAM, 11, Russell-square, W.C.
- 1871 GLYNN, THOMAS ROBINSON, M.D., F.R.C.P., 62, Rodney-street, Liverpool,  
Physician to the Royal Infirmary, Liverpool. *ns.*
- 1857 GODFREY, JOHN BLENHEIMHASSET, M.D., F.R.C.P. Edin., Ormonde House,  
North-gate, Regent's-park, N.W.
- 1869 GODSON, CLEMENT, M.D., M.R.C.P., 9, Grosvenor-street, W., Assistant  
Physician-Accoucheur to St. Bartholomew's Hospital. *vp, c 3, s 2, sm.*
- 1872 GODSON, CHARLES, F.R.C.S., 1, Astwood-road, Cromwell-road, S.W.
- 1873 GOODALL, DAVID HENRY, F.R.C.S., 17, Devonshire-place, Portland  
place, W., Surgeon to the Metropolitan Free Hospital; Assistant  
Surgeon to St. Mark's Hospital. *s 2, sm. Councillor.*
- 1880 GOUDIE, HERBERT, F.R.C.S. Edin., Smallpox Hospital, Highgate-hill, N.
- 1878 GOULD, ALFRED PEARCE, M.S., F.R.C.S., 16, Queen Anne-street, W., Assistant  
Surgeon to the Middlesex Hospital. *c 3. Hon. Secretary.*
- 1876 GOWERS, WILLIAM RICHARD, M.D., F.R.C.P., 50, Queen Anne-street, W.,  
Physician to, and Assistant Professor of Clinical Medicine at, Uni-  
versity College Hospital; Physician to the National Hospital for the  
Paralysed and Epileptic. *c, sm.*
- 1874 GOWLLAND, PETER YEAMES, F.R.C.S., 34, Finsbury-square, E.C., Senior  
Surgeon to St. Mark's Hospital.
- 1867 GRASEMANN, CHRISTIAN EDWARD, M.D., 46, Albany-street, Regent's-  
park, N.W.
- 1881 GREEN, THOMAS HENRY, M.D., F.R.C.P., 74, Wimpole-street, W., Physician  
to, and Lecturer on Pathological Anatomy at, Charing Cross Hospital;  
Senior Assistant Physician to the Hospital for Consumption,  
Brompton.
- 1841 \*GREENHALGH, ROBERT, M.D., 35, Cavendish-square, W., late Physician-  
Accoucheur to St. Bartholomew's Hospital. *p, vp, o, s 3, c 5.*
- 1868 GREGSON, GEORGE, 63, Harley-street, Dental Surgeon to the Dental Hos-  
pital of London.
- 1873 GRIEVE, ROBERT, M.D., British Guiana.
- 1875 GRIFFITH, G. DE GOREQUE, 34, St. George's-square, S.W.
- 1882 GRIFFITH, WALTER SPENCER ANDERSON, F.R.C.S., M.R.C.P., 66, Guild-  
ford-street, W.C., Tutor in Midwifery, St. Bartholomew's Hospital.
- 1880 GRISTOCK, WILLIAM, M.D. Lond., 6, Finchley-road, N.W.
- 1859 HABERSHON, SAMUEL OSBORNE, M.D., F.R.C.P., 70, Brook-street, W., late  
Senior Physician to, and Lecturer on Medicine at, Guy's Hospital.  
*p, ll, o, c 3.*
- 1881 HALL, CHARLES ROSS, Hatfield, Herts.
- 1874 \*HALL, FRANCIS DE HAVILLAND, M.D., F.R.C.P., 46, Queen Anne-street,  
W., Assistant Physician to, and Lecturer on Medical Jurisprudence  
at, the Westminster Hospital. *c 3, s 2, sm.*
- 1881 HAMES, GEORGE HENRY, F.R.C.S., 2, Queenborough-terrace, Kensington-  
gardens, W.

- 1880 HAMILTON, FRANCIS GEORGE, Abchurch House, Sherbourne-lane, E.C.  
Surgeon to the Central Throat and Ear Hospital.
- 1878 HAMILTON, JULIUS LAWRENCE, 34, Gloucester-terrace, Hyde-park, W.
- 1871 HAMILTON, ROBERT, M.D., Surgeon 1st Life Guards, Travelling.
- 1879 HAMILTON, SETON GUTHRIE, Knightsbridge Barracks, W.
- 1884 HARDING, WILLIAM, F.R.C.S., 4, Percy-street, Bedford-square, W. VP 2,  
c 3.
- 1875 HARDWICKE, HERBERT JESUIT, M.D., C.M., Parson Lodge, Sharrow,  
Sheffield.
- 1873 HARDWICKE, JESUIT, F.R.C.S., Rotherham, Senior Consulting Surgeon to  
the Rotherham Hospital.
- 1862 HARPER, GERALD SAMUEL, M.B., 5, Hertford-street, Mayfair.
- 1871 HARRIS, CHARLES JAMES, 11, Kilburn Priory, N.W.
- 1872 HARRIS, HENRY, LL.D., M.D., F.R.C.S., Redruth, Cornwall. ns.
- 1873 HARRIS, WILLIAM JOHN, 26, Marine Parade, Worthing, Senior Medical  
Officer to the Worthing Infirmary.
- 1851 HARRISON, CHARLES HENRY ROGERS, F.R.C.S., Vine House, 55, Stockwell-  
road, S.W., Consulting Surgeon to St. Pancras Infirmary. VP 2, T 6,  
s 5, c 3, sm. Trustee.
- 1871 HARRISON, REGINALD, F.R.C.S., 38, Rodney-street, Liverpool, Surgeon  
to the Royal Infirmary. ns.
- 1883 HARTBRIDGE, GUSTAVUS, F.R.C.S., 47, Kensington-park-gardens, W.  
Assistant Surgeon to the Royal Westminster Hospital.
- 1864 HARVEY, JOHN ALEXANDER, 35, Princes-square, Bayswater, W.
- 1882 HARVEY, JOHN STEPHENSON, 6, Rue de la Coupe, Boulogne-sur-Mer.
- 1882 HASLAM, WILLIAM FREDERICK, F.R.C.S., The Minories, Bull-street, Birmingham,  
Assistant Surgeon to the Birmingham General Hospital.
- 1852 HAWARD, EDWIN, M.D., M.R.C.P., F.R.C.S., 9, Harley-street, W., Phy-  
sician to the North London Consumption Hospital.
- 1883 HAWKEN, CHARLES ST. AUBYN, 20, North-terrace, Wandsworth, S.E.
- 1871 HEMMING, WILLIAM BENJAMIN, 26, Notting-hill-terrace, W.
- 1849 HENRY, ALEXANDER, M.D., 132, Highbury-hill, N., Hon. Secretary to the  
Metropolitan Counties Branch of the British Medical Association. c 7.
- 1878 HENRY, LOUIS, M.D., Melbourne, Australia.
- 1883 HERMAN, GEORGE ERNEST, M.B., M.R.C.P., F.R.C.S., 7, West-street,  
Finsbury Circus, E.C., Obstetric Physician to, and Lecturer on  
Obstetric Medicine at, the London Hospital.
- 1870 HERON, GEORGE ALLAN, M.D., M.R.C.P., 40, Margaret-street, Cavendish-  
square, W., Physician to the City of London Hospital for Diseases  
of the Chest.
- 1883 HERSCHEL, GEORGE A., M.D., 29, Moorgate-street, E.C.
- 1883 HEWITT, FREDERICK WILLIAM, M.A., M.B., 1, St. George's-place, S.W.
- 1876 HEYCOCK, FRANCIS RAWORTH, M.D., C.M., 26, Upper Wimpole-street, W.,  
Surgeon to the North-West London Hospital; Assistant Surgeon to  
St. Peter's Hospital.
- 1872 HICKS, JOHN BRAXTON, M.D., F.R.C.P., F.R.S., 24, George-street, Han-  
over-square, Consulting Physician-Accoucheur to Guy's Hospital. c.

XLIII

- 1884 HILL, BERKELEY, F.R.C.S., M.B., 55, Wimpole-street, W., Surgeon to University College Hospital and Professor of Clinical Surgery in University College.
- 1881 HILL, JAMES, M.D., Thatched House Club, St. James's, SW.
- 1867 HILL, THOMAS HARVEY, 4, Stanhope-terrace, Bayswater. T, c 3.
- 1840 HIRD, FRANCIS, F.R.C.S., 18, Old Burlington-street, W., Consulting Surgeon to the Charing Cross Hospital. P 2, VP 6, LL, o 2, c 12. Trustee.
- 1873 HOBSON, WILLIAM HENRY, Great Berkhamstead, Herts, Honorary Surgeon to the West Herts Infirmary.
- 1879 HOOG, ARTHUR JOHN, Westbourne Villa, Ealing, W.
- 1818 HOOG, JAMES, 1, Bedford-square, W.C., Consulting Surgeon to the Royal Westminster Ophthalmic Hospital. VP, c 2.
- 1868 HOLMAN, CONSTANTINE, M.D., Reigate. c 4.
- 1881 HOOD, DONALD WILLIAM CHARLES, M.D., M.R.C.P., 43, Green-street, W., Physician to the West London Hospital.
- 1879 HOOKHAM, PAUL, 7, Bloomsbury-place, W.C.
- 1875 HOPE, WILLIAM, M.D., M.R.C.P., 56, Curzon-street, Mayfair, W., Senior Physician to Queen Charlotte's Lying-in Hospital, and Senior Physician to the Belgrave Hospital for Children.
- 1883 \*HOVELL, T. MARK, F.R.C.S. Edin., 3, Mansfield-street, W., Aural Surgeon to the London Hospital.
- 1879 HUGGARD, WILLIAM RICHARD, M.A., M.D., M.Ch., M.R.C.P., Hammersmith.
- 1864 HUME, FREDERICK HENRY, 53, Devonshire-street, Islington, N.
- 1881 HUTCHINSON, JONATHAN, F.R.C.S., F.R.S., 15, Cavendish-square, Consulting Surgeon to the London Hospital; late Professor of Pathology and Surgery at the Royal College of Surgeons.
- 1875 HUTCHINSON, SAMUEL JOHN, 44, Brook-street, W., Dental Surgeon to, and Clinical Lecturer at, the University College Hospital, and Surgeon to the Dental Hospital of London.
- 1868 JACKSON, JOHN HUGHINGS, M.D., F.R.C.P., F.R.S., 3, Manchester-square, W., Physician to the London Hospital. o, c 2.
- 1853 JACKSON, ROBERT, M.D., 53, Notting-hill-square, W.
- 1874 JAGIELSKI, VICTOR APOLLINARIS, M.D., M.R.C.P., 20, Weymouth-street, Portland-place, W., Physician to the Infirmary for Consumption, Margaret-street, W.
- 1882 JAMES, JOSEPH BRINDLEY, 47, Jamaica-road, Bermondsey, S.E.
- 1883 JESSETT, FREDERICK BOWREMAN, 16, Upper Wimpole-street, W.
- 1883 JESSOP, WALTER HAMILTON HYLTON, B.A., M.B., 73, Harley-street, W., Assistant Surgeon to the Central London Ophthalmic Hospital.
- 1873 JOHNSON, JEFFREY STRUDWICK, 105A, High-street, Croydon, Surgeon to the Croydon Dispensary.
- 1881 JOHNSON, JOHN, M.D., Belmont Church-road, Tunbridge Wells, Physician to the Tunbridge Wells Infirmary.

- 1875 JONES, SYDNEY, M.B., F.R.C.S., 16, George-street, Hanover-square, W., Senior Surgeon to, and Lecturer on Surgery at, St. Thomas's Hospital.
- 881 JONES, THOMAS WILLIAM CARMALT, M.A., 6, Westbourne-street, W.
- 1877 JULER, HENRY EDWARD, F.R.C.S., 77, Wimpole-street, W., Assistant Surgeon and Pathologist to the Westminster Ophthalmic Hospital.
- 1881 KAESER, JEAN SAMUEL, M.D., 60, Queen Anne-street, W.
- 1874 KAVANAGH, PATRICK, M.D., 186, Lewisham High-road, S.E.
- 1847 KELLOCK, WILLIAM BERRY, M.D., F.R.C.S., Stamford-hill, N.
- 1883 KEMP, JOHN ROBERT, 101, Jermyn-street, S.W.
- 1873 KEMPTHORNE, JOHN, F.R.C.S., Callington, Cornwall.
- 1876 KEY, AUGUSTUS COOPER, M.R.C.P. Edin., 30, Wilton-place, S.W.
- 1869 \*KING, KELBURN, M.D., F.R.C.S., J.P., 6, Albion-street, Hull, Surgeon to the Hull General Infirmary.
- 1868 KIRKMAN, WILLIAM PHILLIPS, M.D., St. Leonard's-on-Sea. ns.
- 1868 KNAGGS, SAMUEL, Ebor Mount, Huddersfield, Surgeon to the Huddersfield and Upper Agbrigg Infirmary. ns.
- 1883 KNAPTON, GEORGE, Southampton.
- 1875 KNOX, JOHN, M.D., M.C., Resident Medical Officer, Bethnal Green Infirmary, E.
- 1868 LAKE, WILLIAM CHARLES, M.D., Teignmouth, Devon, Surgeon to the Teignmouth Infirmary.
- 1883 LANGFORD, PHINIAS PITTS, M.D., Park Lodge, East Finchley, N.
- 1881 LANGTON, JOHN, F.R.C.S., 2, Harley Street, W., Surgeon to, and Lecturer on Anatomy at, St. Bartholomew's Hospital.
- 1882 LARKIN, FRANK COLET, M.B., C.M., 86, Gower-street, W.C.
- 1875 LATTEY, JAMES, 28, St. Mary Abbot's-terrace, Kensington, W.
- 1858 LAWSON, GEORGE, F.R.C.S., 12, Harley-street, W., Surgeon to the Middlesex Hospital, and to the Royal London Ophthalmic Hospital. VP 2, c 3.
- 1873 LEE, ROBERT JAMES, M.A., M.D., F.R.C.P., 6, Savile-row, W., Senior Assistant Physician to the Hospital for Sick Children. c.
- 1869 LEES, CHARLES ALEXANDER, M.D., Fleet Surgeon, R.N. ns.
- 1858 LEMON, OLIVER, Kings Langley, Herts.
- 1867 LICHTENBERG, GEORGE, M.D., M.R.C.P., 47, Finsbury-square, Surgeon to the German Hospital. c 2.
- 1869 LIPSCOMB, JOHN THOMAS NICHOLSON, M.D., F.R.C.S., St. Albans, Herts. ns.
- 1878 LISTER, Sir JOSEPH, Bart., D.C.L., LL.D., M.D., F.R.C.S., F.R.S., 12 Park-crescent, Portland-place, Surgeon Extraordinary to H.M. the Queen, Surgeon to, and Professor of Clinical Surgery at, King's College Hospital.
- 1870 LLOYD, RIDGWAY ROBERT SYERS CHRISTIAN CODNER, St. Albans, Senior Surgeon to St. Albans Hospital.

- 1878 **LOCKWOOD, CHARLES BABRETT**, F.R.C.S., 8, Serjeants' Inn, E.C., Surgeon to the Great Northern Hospital.
- 1873 **LOE, JAMES SCARBOROUGH**, 96, Woodhouse-lane, Leeds, Surgeon to the Leeds Fever Hospital.
- 1881 **LORIMER, G.**, M.D., Buxton, Derbyshire.
- 1868 **LOWE, JOHN**, M.D., J.P., Kings Lynn, Medical Attendant to their Royal Highnesses the Prince and Princess of Wales at Sandringham, Consulting Surgeon to the West Norfolk and Lynn Hospital.
- 1868 \***LUND, EDWARD**, F.R.C.S., 22, St. John's-street, Manchester, Consulting Surgeon to the Manchester Royal Infirmary; Professor of Surgery in Owens College; Examiner at the Royal College of Surgeons. *Orator.*
- 1869 **LUNN, WILLIAM JOSEPH**, M.D., F.R.C.S., Hull, Senior Surgeon to the Hull General Infirmary. *ns.*
- 1881 **LYONS, ISIDOR**, 19, Queen Anne-street, W., Assistant Dental Surgeon to St. Bartholomew's Hospital.
- 1879 **LYONS, RICHARD THOMAS**, Surgeon-Major Bengal Army.
- 1871 **MACCORMAC, SIR WILLIAM**, M.A., D.Sc., M.Ch., F.R.C.S., 13, Harley-street, W., Surgeon to, and Lecturer on Surgery at, St. Thomas's Hospital. c 3. *Hon. Secretary for Foreign Correspondence.*
- 1882 **MACKELLAR, ALEXANDER OBERLIN**, M.D., M.Ch., F.R.C.S., Senior Assistant Surgeon to, and Lecturer on Practical Surgery at, St. Thomas's Hospital.
- 1862 **MACKENZIE, MORELL**, M.D., 19 Harley-street, W., Physician to the Hospital for Diseases of the Throat; Lecturer on Diseases of the Throat at the London Hospital.
- 1880 **MACKENZIE, STEPHEN**, M.D., F.R.C.P., 26, Finsbury-square, E.C., Physician to, and Lecturer on Medicine at, the London Hospital.
- 1880 **MACKRELL, ALFRED SEXTUS**, 59, Queen Anne-street, W.
- 1881 **MACLAGAN, THOMAS JOHN**, M.D., M.R.C.P., 9, Cadogan-place, S.W., Physician in Ordinary to T.R.H. the Prince and Princess Christian of Schleswig-Holstein.
- 1861 **MACLAREN, ALEXANDER CONNELL**, 60, Harley-street, W.
- 1864 **MACPHERSON, JOHN**, M.A., M.D., 35, Curzon-street, Mayfair, W., Physician to the Scottish Hospital.
- 1883 **MADDICK, EDMUND DISTIN**, F.R.C.S. Edin., 17, Upper Wimpole-street, W.
- 1869 **MAGILL, MARTIN**, M.D., F.R.C.S., 6, Westbourne Park-road, W.
- 1878 **MAIR, ROBERT SLATER**, M.D., 28, Ledbury-road, Bayswater, W.
- 1876 **MANVILLE, BENJAMIN EPHEMIAH**, 38, Sutherland-road, W., Surgeon-Dentist to the Metropolitan Free Hospital.
- 1883 **MARGRISON, RICHARD**, B.A., F.R.C.S., 15, Gloucester-street, Belgrave-road, S.W., Surgical Registrar to St. George's Hospital.
- 1873 **MARSHALL, EDWARD**, Mitcham, Surrey.
- 1869 **MARSHALL, JAMES**, M.D., 6, Rubislaw-place, Aberdeen. *ns.*
- 1869 **MARSHALL, WILLIAM**, M.D., Torrieburn, Barnes, S.W.

- 1864 MARSHALL, WILLIAM GURSLAVE, F.R.C.S., Medical Superintendent Female Department, Asylum, Colney Hatch, N.
- 1874 MARTIN, ADAM RAE, "The Precincts," Rochester.
- 1862 MASON, FRANCIS, F.R.C.S., 5, Brook-street, Grosvenor-square, W., Surgeon to, and Lecturer on Practical Surgery at, St. Thomas' Hospital. P, T, LL, O, VP, s 2, c 4, sm.
- 1869 MATHEWS, ROBERT, Bickley, Kent. ns.
- 1871 MAURICE, OLIVER CALLEY, Reading, Surgeon to the Royal Berks Hospital. ns.
- 1850 MAY, WILLIAM COSTALL, 52, Tregunter-road, South Kensington, S.W.
- 1862 MAYBURY, AUGUSTUS KINGSTON, M.D., Holly Lodge, Richmond, Surrey, Consulting Physician to the Richmond Hospital. ns.
- 1869 McDONAGH, JAMES ARMSTRONG, F.R.C.S., 211, Hampstead-road, N.W.
- 1884 McGANN, TERENCE JOSEPH, Surgeon-Major, Madras Army.
- 1873 MC HARDY, MALCOLM MACDONALD, F.R.C.S. Edin., 5, Savile-row, W., Professor of Ophthalmology in King's College, and Ophthalmic Surgeon to King's College Hospital.
- 1868 MC INTYRE, JOHN, M.D., Odiham, Hants. ns.
- 1884 MEREDITH, WILLIAM APPLETON, M.D., C.M., 6, Queen Anne-street, W., Surgeon to the Samaritan Free Hospital.
- 1874 MÉRIC, HENRY DE, 25, King-street, St. James, S.W., Assistant Surgeon to the French Hospital.
- 1864 MIDDLEMIST, ROBERT PERCY, 10, Bedford-place, Russell-square, W.C.
- 1858 MILLAB, JOHN, Medical Superintendent to the Bethnal House Asylum, Cambridge-road, E.
- 1881 MILLICAN, KENNETH WILLIAM, B.A., North Lodge, Kineton, Warwick.
- 1878 MILNER, EDWARD, 32, New Cavendish-street, W., Surgeon to the Lock Hospital.
- 1882 MILLS, JOSEPH, 15, Henrietta-street, Cavendish-square, W., Administrator and Teacher of Anæsthetics to St. Bartholomew's Hospital.
- 1882 MIVART, FREDERICK ST. GEORGE, 6, Devonport-street, Hyde-park, W.
- 1877 MONCKTON, MARSHALL, West Dene, Maidstone.
- 1883 MONEY, ANGEL, M.D., 14, Langham-place, W.
- 1875 MOORE, JOSEPH, M.D., Hard Deane, Thornton-heath.
- 1883 MOORE, THOMAS, F.R.C.S., 6, Lee-terrace, Blackheath, S.E.
- 1883 MORGAN, JOHN HAMMOND, M.A., F.R.C.S., 68, Grosvenor-street, W., Assistant Surgeon to Charing Cross Hospital.
- 1871 MORLEY, ALEXANDER, 42, Albemarle-street, W.
- 1881 MORRIS, HENRY, M.A., M.B., F.R.C.S., 2, Mansfield Street, Portland-place, W., Surgeon to, and Lecturer on Surgery at, the Middlesex Hospital. Councillor.
- 1878 MORRIS, MALCOLM ALEXANDER, F.R.C.S. Edin., 63, Montagu-square, W., Surgeon to the Skin Department of, and Lecturer on Dermatology at, St. Mary's Hospital. c 2.
- 1883 MOOTIMBER, JOHN DESMOND ERNEST, 59, Mount-st., Grosvenor-square, W.
- 1882 MOOTON, ANDREW STANFORD, M.B., C.M., 57, Welbeck-street, W., Senior Assistant Surgeon to the Royal South London Ophthalmic Hospital.

XLVII

- 1883 MOWAT, GEORGE, M.R.C.P. Edin., St. Alban's.  
1878 MUMFORD, WILLIAM LUGAR, M.D., 1, Bartlett's-passage, Holborn, E.C.  
1868 MURRAY, JOHN CARRICK, M.D., 44, Newgate-street, Newcastle-on-Tyne.  
    ns.  
1883 MURRAY, JAMES, M.D., 21, Weymouth-street, W.  
1879 MURRELL, WILLIAM, M.D., F.R.C.P., 38, Weymouth-street, W., Assistant Physician to, and Lecturer on *Materia Medica* and *Therapeutics* at, the Westminster Hospital.  
1873 MYERS, HENRY REYNOLDS, 30, Euston-square, N.W.  
  
1863 NANKIVELL, CHARLES BENJAMIN, M.D., Ashley Lodge, Torquay, Senior Physician to the Consumption Hospital, Torquay. ns.  
1877 NESBITT, DAWSON, M.D., 34, Cambridge-place, Hyde-park, W.  
1880 NETHERCLIFT, WILLIAM HENRY, F.R.C.S., Junior Athenaeum Club, Piccadilly, W.  
1868 NEVINS, JOHN BIRKBECK, M.D., 3, Abercromby-square, Liverpool, Consulting Surgeon to the Ear and Eye Infirmary. ns.  
1876 NEWHAM, JAMES, 16, Princes-street, Cavendish-square, W.  
1871 NICHOLLS, JOHN FREDERICK, M.D., M.R.C.P., Devizes. ns.  
1880 NIX, EDWARD JAMES, M.D., 143, Great Portland-street, W.  
1868 NOBLE, DANIEL, M.A., M.D., F.R.C.P., 258, Oxford-road, Manchester. ns.  
  
1871 OGLE, WILLIAM, M.A., M.D., F.R.C.P., Derby, Physician to the Derbyshire General Infirmary. ns.  
1873 OGSTON, ALEXANDER, M.D., C.M., 252, Union-street, Aberdeen, Regius Professor of Surgery in the University of Aberdeen; Surgeon to the Aberdeen Royal Infirmary.  
1872 OGSTON, FRANCIS, M.D., 13, Albyn-terrace, Aberdeen, Emeritus Professor of Medical Logic and Medical Jurisprudence in the University of Aberdeen. ns.  
1881 ORAM, ARTHUR MURRAY, M.D., C.M., Sydney, N. S. Wales.  
1875 ORD, WILLIAM MILLIE, M.D., F.R.C.P., 7, Brook-street, W., Physician to, and Lecturer on Medicine at, St. Thomas's Hospital. c.  
1880 OSBORN, SAMUEL, F.R.C.S., 10, Maddox-street, Regent-street, W.  
1890 OSWALD, JAMES WADDELL JEFFREYS, M.D., 245, Kennington-road, S.E.  
1883 OWEN, CHARLES J. RAYLEY, 61, Cleveland-square, W.  
1878 \*OWEN, EDMUND, M.B., F.R.C.S., 49, Seymour-street, Portman-square, Surgeon to, and Lecturer on Anatomy at, St. Mary's Hospital; Senior Assistant Surgeon to the Hospital for Sick Children. c 2, s 2, sm. *Chairman of Council.*  
1881 OWEN, ISAMBARD, M.A., M.D., M.R.C.P., 5, Hertford-street, Mayfair, W., Assistant Physician to, and Lecturer on *Materia Medica* and *Therapeutics* at, St. George's Hospital. *Hon. Secretary.*  
  
1880 PALMER, FREDERICK STEVEN, M.D., Compton Lodge, East Sheen, S.W.  
1882 PALMER, WILLIAM PITT, 6, Claude Villa, East Dulwich, S.E.

XLVIII

- 1877 PARAMORE, RICHARD, 18, Hunter-street, W.C.  
1883 PARKER, ROBERT WILLIAM, 8, Old Cavendish-street, W., Surgeon to the East London Children's Hospital.  
1867 PARKINSON, GEORGE, 50, Brook-street, Grosvenor-square, W., late Surgeon Dentist to, and Lecturer on Dental Surgery at, Charing Cross Hospital.  
1880 PARKINSON, GEORGE WILLIAM, 36, Sackville-street, Piccadilly, W., Assistant Surgeon to the Dental Hospitals of London.  
1881 PARROTT, EDWARD JOHN, Hayes, Uxbridge, Middlesex.  
1871 PARSONS, FRANCIS HENRY, M.D., C.M., 6, West-hill, Hastings.  
1872 PATTEN, CHARLES ARTHUR, Marpool House, Ealing, W.  
1861 PAUL, JOHN HAYBALL, M.D., M.R.C.P., F.R.C.S., Camberwell House, Camberwell, S.E. c 6.  
1854 PAVY, FREDERICK WILLIAM, M.D., F.R.C.P., F.R.S., 35, Grosvenor-street, W., Physician to, and Lecturer on Medicine at, Guy's Hospital. VP, LL, C.  
1881 \*PEACEY, WILLIAM, M.B., C.M., 214, Lewisham High-road, S.E.  
1883 PECK, EDWARD GEORGE, M.A., 5, Hertford-street, Mayfair, W.  
1871 PEDLER, GEORGE HENRY, 6, Trevor-terrace, Knightsbridge, S.W.  
1880 PEEL, ROBERT, 120, Collins-street, East Melbourne, Australia.  
1869 PEMBERTON, OLIVER, F.R.C.S., J.P., 12, Temple-row, Birmingham, Senior Surgeon to the Birmingham General Hospital; Professor of Surgery in Queen's College. NS.  
1883 PENNY, GEORGE TOWN, M.D., Stanley House, 3, Oakfield-road, Upper Tollington-park, N.  
1883 PERBIGAL, ARTHUR, C.M., M.D., New Barnet.  
1883 PHILLIPS, SIDNEY PHILIP, M.D., M.R.C.P., 12, Radnor-place, Hyde-park, W., Demonstrator of Anatomy at St. Mary's Hospital.  
1878 PHILLIPS, STERLING REES, M.D., M.Ch., Medical Superintendent of Wonford House, Exeter.  
1869 PHILIPSON, GEORGE HARE, D.C.L., M.D., M.A., F.R.C.P., J.P., 7, Eldon-square, Newcastle-on-Tyne, Professor of Medicine in the University of Durham, and Senior Physician to the Newcastle Infirmary. NS.  
1876 PHILLIPS, CHARLES DOUGLAS FERGUSON, M.D., M.R.C.P., 10, Henrietta-street, Cavendish-square, W., late Lecturer on Materia Medica and Therapeutics at the Westminster Hospital.  
1873 PHILLIPS, GEORGE RICHARD TURNER, 24, Leinster-square, Hyde-park, W.  
1875 PHILPOT, HARVEY JOHN, 55, Warwick-road, Maida-vale, W.  
1883 PICK, THOMAS PICKERING, F.R.C.S., 18, South Eaton-place, S.W., Surgeon to, and Lecturer on Surgery at, St. George's Hospital.  
1883 PITTS, BERNARD, M.B., M.C., F.R.C.S., Assistant Surgeon to St. Thomas' Hospital, S.E.  
1878 PORT, HEINRICH, M.D., M.R.C.P., 48, Finsbury-square, E.C., Physician to the German Hospital.

XLIX

- 1850 POTT, WILLIAM, F.R.C.S., 2, Albert Terrace, Regent's-park, N.W. c 3.
- 1868 POWELL, JOSIAH TAYLOR, M.D., 347, City-road, E.C.
- 1871 POWELL, RICHARD DOUGLAS, M.D., F.R.C.P., 62, Wimpole-street, W., Physician to the Middlesex Hospital and to the Hospital for Consumption, Brompton. c 2.
- 1869 PRICE, WILLIAM PRESTON, M.D., 1, Ethelbert-crescent, Margate, Surgeon to the Royal Margate Infirmary. ms.
- 1869 PRIOR, CHARLES EDWARD, M.D., F.R.C.S., St. Peter's, Bedford, Coroner for Bedford. ms.
- 1873 PURELL, FERDINAND ALBERT, M.D., M.Ch., 7, Manchester-square, W., Surgeon to the Cancer Hospital, Brompton.
- 1878 PYE, WALTER, F.R.C.S., 4, Sackville-street, Piccadilly, W., Surgeon to, and Lecturer on Physiology at, St. Mary's Hospital.
- 1882 PYLE, THOMAS THOMPSON, M.D., J.P., 5, Lower Seymour-street, W.
- 1870 QUAIN, RICHARD, M.D., F.R.C.P., F.R.S., 67, Harley-street, W., Consulting Physician to the Hospital for Consumption, Brompton. vp, c 3.
- 1883 RALFE, CHARLES HENRY, M.A., M.D., F.R.C.P., 26, Queen Anne-street, W., Assistant Physician to the London Hospital.
- 1861 RAMSKILL, JABEZ SPENCE, M.D., M.R.C.P., 5, St. Helen's-place, E.C., Consulting Physician to the London Hospital.
- 1881 RANKING, JOHN EBENEZER, M.A., M.D., M.R.C.P., 18, Mount Ephraim-road, Tunbridge Wells, Physician to the Tunbridge Wells Infirmary.
- 1859 \*RAYNER, JOHN, M.R.C.P. Edin., Swaledale House, Highbury-quadrant.
- 1850 READ, REGINALD, F.R.C.P. Edin., 1, Guilford-place, W.C. c 2.
- 1850 REES, GEORGE OWEN, M.D., F.R.C.P., F.R.S., 26, Albemarle-street, W., Consulting Physician to Guy's Hospital. vp 2, ll.
- 1879 REEVES, HENRY ALBERT, F.R.C.S. Edin., 6, Grosvenor-street, W., Assistant Surgeon to, and Teacher of Practical Surgery at, the London Hospital.
- 1882 REID, ROBERT W., M.D., C.M., F.R.C.S., 75, Lambeth Palace-road, S.E., Lecturer on Anatomy at St. Thomas's Hospital.
- 1882 REID, THOMAS WHITHEAD, F.R.C.P. Edin., 34, St. George's-place, Canterbury, Surgeon to the Kent and Canterbury Hospital.
- 1872 REYNOLDS, JOHN RUSSELL, M.D., F.R.C.P., F.R.S., 38, Grosvenor-street, W., Physician in Ordinary to H.M.'s Household; Emeritus Professor of the Principles and Practice of Medicine in University College; Consulting Physician to University College Hospital. c 3.
- 1872 RICHARDS, JOSEPH PEAKS, Medical Superintendent, Female Department, County Asylum, Hanwell, W.
- 1850 RICHARDSON, BENJAMIN WARD, M.A., M.D., LL.D., F.R.C.P., F.R.S., 25, Manchester-square, W. r, vp, ll, c 5, o, fm 1854.
- 1882 RING, EDMUND CUTTHEBERT, Salisbury Club, 10, St. James's-square, S.W.

## L

- 1830 ROBERTS, HENRY PRATT, F.R.C.S., 31, Great Coram-street, W.C. VP 2,  
s 9, c 10, fm 1844, sm.
- 1869 ROBERTS, BRANSBY, M.D., Badlesmere House, Eastbourne. NS.
- 1868 \*ROBERTS, DAVID LLOYD, M.D., F.R.C.P., F.R.S.E., 11, St. John's-street,  
Manchester, Physician to St. Mary's Hospital, Manchester.
- 1857 ROBERTS, DAVID WATKIN, M.D., 56, Manchester-street, W.
- 1874 ROBERTS, FREDERICK THOMAS, M.D., B.Sc., F.R.C.P., 53, Harley-street,  
W., Physician to University College Hospital; Professor of Materia  
Medica and Therapeutics in University College; Physician to the  
Hospital for Consumption, Brompton.
- 1880 ROBERTS, WILLIAM. Travelling.
- 1873 ROBERTSON, WILLIAM HENRY, M.D., F.R.C.P., J.P., Buxton, Derbyshire,  
Consulting Physician to the Devonshire Hospital and Buxton Bath  
Charity.
- 1877 ROECKEL, WALDEMAR JOSEPH, M.B., B.S., F.R.C.S., 7, Grosvenor-street,  
Grosvenor-square, W., Surgeon to the National Orthopaedic Hospital;  
Surgical Registrar to the Charing Cross Hospital.
- 1869 RODEN, WILLIAM, M.D., F.R.C.S., Kidderminster. NS.
- 1869 ROGERS, CHARLES EDWARD HERON, Retford, Notts. NS.
- 1856 ROGERS, JOSEPH, M.D., 33, Soho-square, W.
- 1847 ROGERS, WILLIAM RICHARD, M.D., C.M., M.R.C.P., 56, Berners-street, W.,  
Consulting Physician to the Samaritan Free Hospital. VP, c 6.
- 1874 ROSE, WILLIAM, M.B., B.S., F.R.C.S., 50, Harley-street, Surgeon to King's  
College Hospital.
- 1883 \*ROSS, DANIEL MCCLURE, F.R.C.S.E., 54, Upper Berkeley-street, W.,  
Curator of the Museum, St. George's Hospital.
- 1876 ROUTH, ALFRED CURTIS, 33, Marina, St. Leonard's-on-Sea.
- 1881 ROUTH, AMAND JULES McCONNEL, M.D., B.S., M.R.C.P., 6, Upper Montagu-street, W., Assistant Obstetric Physician to the Charing Cross  
Hospital; Physician to the Samaritan Free Hospital.
- 1848 ROUTH, CHARLES HENRY FELIX, M.D., M.R.C.P., 52, Montagu-square,  
W., Consulting Physician to the Samaritan Free Hospital. P, VP 2,  
s 4, c 6, sm. *Trustee.*
- 1879 RYLEY, JAMES BERESFORD, M.D., 24, Finsbury-square, E.C., Physician  
to the Finsbury Hospital for Women.
- 1884 SALTER, THOMAS KNIGHT, 23, Lower Seymour-street, W.
- 1869 SANDWELL, EDWARD, 10, Charles-street, Soho-square, W.
- 1868 SANSOM, ARTHUR ERNEST, M.D., F.R.C.P., 84, Harley-street, W., Phy-  
sician to, and Lecturer on Medical Jurisprudence at, the London  
Hospital; Senior Physician to the North Eastern Hospital for Children.  
VP, s 2, c 4, sm, §. *Councillor.*
- 1873 SCOTT, WILLIAM, M.D., M.R.C.P., Waverley House, Huddersfield, Senior  
Physician to the Huddersfield Infirmary.‡
- 1873 SEDGWICK, JAMES, M.D., Boroughbridge, Yorkshire.

## LI

- 1868 SEDGWICK, LEONARD WILLIAM, M.D., 2, Gloucester-terrace, Hyde-park, W. VP 2, c 4, § 3.
- 1883 SEMON, FELIX, M.D., M.R.C.P., 59, Welbeck-street, W., Assistant Physician in charge of the Throat Department, St. Thomas' Hospital.
- 1869 SEMPLE, ROBERT HUNTER, M.D., F.R.C.P., 8, Torrington-square, W.C., Physician to the Hospital for Diseases of the Throat. c.
- 1876 SEWELL, CHARLES BRODIE, M.D., 21, Cavendish-square, W. *Councillor.*
- 1864 SEWILL, HENRY EZEKIEL, 6, Wimpole-street, W. c 2.
- 1882 SHEPPARD, CHARLES EDWARD, M.D., B.S., F.R.C.S., Rotherwood, Oak-hill-road, Putney, S.W.
- 1875 SHEPPARD, EDGAR, M.D., F.R.C.S., M.R.C.P., 42, Gloucester-square, Hyde Park, W., Professor of Psychological Medicine in King's College.
- 1871 SHETTLE, RICHARD CHARLES, M.D., 73, London-street, Reading, Physician to the Royal Berkshire Hospital. ns.
- 1881 SHIPTON, ARTHUR, Buxton, Derbyshire, Hon. Medical Officer to the Devonshire Hospital.
- 1871 SHIPTON, WILLIAM PARKER, Buxton, Derbyshire, Consulting Surgeon to the Devonshire Hospital.
- 1867 \*SIMMS, FREDERICK, M.B., M.R.C.P., 6, Mandeville-place, Manchester-square, W. c 2.
- 1883 SKELLDING, JOSEPH, 16, Euston-square, N.W.
- 1883 SKERRITT, EDWARD MARKHAM, M.D., B.S., M.R.C.P., Richmond Hill, Clifton, Physician to the Bristol General Hospital; Lecturer on Medicine and Pathology in the Bristol Medical School.
- 1862 SLIGHT, GEORGE, M.D., 3, Clifford-street, Bond-street, W. c 2.
- 1871 SLOMAN, SAMUEL GEORGE, Farnham. ns.
- 1845 SMILES, WILLIAM, M.D., St. Martha's Lodge, Guildford. VP 2, s 4, c 9, sm.
- 1880 SMITH, NOBLE, F.R.C.S. Edin., 24, Queen Anne-street, W.
- 1848 \*SMITH, HENRY, F.R.C.S., 82, Wimpole-street, W., Professor of Surgery in King's College, and Surgeon to King's College Hospital. P, VP, LL, O c 3.
- 1882 SMITH, HERBERT, Westbourne Villa, Uxbridge-road, Ealing, W.
- 1873 SMITH, HEYWOOD, M.A., M.D., M.R.C.P., 18, Harley-street, W., Physician to the Hospital for Women and the British Lying-in Hospital. c 3.
- 1877 SMITH, SYDNEY LLOYD, 32, Argyle-square, King's Cross, W.C.
- 1882 SMITH, THOMAS FREDERICK HUGH, F.R.C.S., Farningham, Kent.
- 1873 \*SMITH, THOMAS GILBERT, M.A., M.D., M.R.C.P., 68, Harley-street, W., Assistant Physician to the London Hospital; Physician to the Royal Hospital for Diseases of the Chest. s 2, sm. *Chairman of Council.*
- 1872 SMITH, WALTER, M.R.C.P. Edin., 2, Stanhope-terrace, Gloucester-gate, Regent's-park, N.W.
- 1874 SMYTH, WILLIAM WOODS, Maidstone.
- 1869 SPENDER, JOHN KENT, M.D., 17, Circus, Bath, Physician to the Mineral Water Hospital. FM 1874.

- 1883 SPITTA, EDMUND JOHNSON, Ivy House, Clapham-common, S.E.
- 1881 SPRINGTHORPE, JOHN WILLIAM, M.A., M.D., M.R.C.P., 49, Manor-road, Lee, S.E.
- 1864 SQUIRE, ALEXANDER JOHN BALMANO, M.B., 24, Weymouth-street, Portland-place, Surgeon to the British Hospital for Diseases of the Skin.
- 1881 STARTIN, JAMES, 16A, Sackville-street, W., Surgeon to the St. John's Hospital for Diseases of the Skin.
- 1869 STEAR, HENRY, Saffron Walden, Essex, Senior Surgeon to the Saffron Walden Hospital. *ns.*
- 1869 STEDMAN, JAMES REMINGTON, M.D., F.R.C.S., J.P., Guildford, Surrey, Consulting Surgeon to the Royal Surrey County Hospital. *ns.*
- 1882 STEWART, JAMES, B.A., M.R.C.P. Edin., Dunmurry, Sneyd-park, Clifton.
- 1883 STEWART, WILLIAM ROBERT HENRY, F.R.C.S., 16, Harley-street, W., Surgeon to the North-west London Hospital.
- 1848 \*STOCKER, JOHN SHEEWOOD, M.D., M.R.C.P., 2, Montagu-square, W. c 10, s 2.
- 1877 STOWERS, JAMES HERBERT, M.D., 23, Finsbury-circus, E.C.
- 1873 STRANGE, WILLIAM HEATH, M.D., C.M., 5, Grosvenor-street, W. *Councillor.*
- 1881 STURGE, WILLIAM ALLEN, M.D., M.R.C.P., 9, Rue Longchamp, Nice. *sm.*
- 1876 \*SUTHERLAND, HENRY, M.A., M.D., M.R.C.P., 6, Richmond-terrace, White-hall, S.W., Lecturer on Insanity at the Westminster Hospital.
- 1874 SUTRO, SIGISMUND, M.D., F.R.C.P., 37A, Finsbury square, E.C., Consulting Physician to the German Hospital.
- 1880 SWEETING, RICHARD DEANE ROKKE, Medical Superintendent Western District Fever Hospital, Fulham, S.W.
- 1881 SYKES, EDWIN JOHN, M.B., C.M., Buxton, Derbyshire.
- 1883 SYKES, JOHN FREDERICK JOSEPH, B.Sc., M.B., C.M., 7, Thayer-street, Manchester-square, W.
- 1864 TAIT, EDWARD WILMSHURST, 54, Highbury-park, N.
- 1870 \*TAIT, LAWSON, F.R.C.S., 7, The Crescent, Birmingham, Surgeon to the Birmingham and Midland Hospital for Women.
- 1875 TAMPLIN, CHARLES HARRIS, 44, Royal-road, Ramsgate.
- 1869 TAYLOR, CHARLES BELL, M.D., Nottingham, Honorary Surgeon to the Nottingham and Midland Eye Infirmary. *ns.*
- 1882 TAYLOR, SEYMOUR, M.D., C.M., M.R.C.P., 222, Tavistock-street, Gordon-square, W.C., Physician to the North London Hospital; Demonstrator of Anatomy at St. Thomas's Hospital.
- 1863 TEEVAN, WILLIAM FREDERICK, B.A., F.R.C.S., Mostyn Villa, Brockman-road, Folkestone. *vp., ll, o, c 3.*
- 1858 THANE, GEORGE DANCE, M.D., 15, Montague-street, Russell-square, W.C.
- 1874 THOMAS, LLEWELLYN MORGAN, M.D., 15, Weymouth-street, Portland-place, W., Surgeon to the Central London Throat and Ear Hospital.

- 1860 THOMPSON, EDMUND SYMES, M.D., F.R.C.P., 33, Cavendish-square, W., Senior Physician to the Hospital for Consumption, Brompton; Gresham Professor of Medicine. VF, o, s 3, c 3, sm.
- 1884 THOMPSON, SIR HENRY, M.B., F.R.C.S., 35, Wimpole-street, W., Consulting Surgeon to University College Hospital; Emeritus Professor of Clinical Surgery in University College.
- 1873 THOMSON, JOHN ROBERTS, M.D., F.R.C.P., Bournemouth, Hants.
- 1876 THORNTON, JOHN KNOWLEY, M.B., M.C., 22, Portman-street, W., Surgeon to the Samaritan Free Hospital.
- 1867 THOBOWGOOD, JOHN CHARLES, M.D., F.R.C.P., 61, Welbeck-street, W., Physician to the City of London Hospital for Chest Diseases; Lecturer on Materia Medica at the Middlesex Hospital. LI, I, s 2, sm, o 3.
- 1854 THUDICHUM, JOHN WILLIAM LOUIS, M.D., F.R.C.P., 11, Pembroke-gardens, Kensington, W. VF, LI, o, c.
- 1876 TIBBITS, HERBERT, M.D., 68, Wimpole-street, W., Senior Physician to the West End Hospital for Diseases of the Nervous System.
- 1867 TIMMS, GODWIN WILLIAM, M.D., M.R.C.P., 9, Wimpole-street, W., Senior Physician to the North London Hospital for Consumption.
- 1836 TOWNSLEY, JAMES, F.R.C.S., 302, Kennington-park-road, S.E. o 3.
- 1865 TRAVERS, WILLIAM, M.D., F.R.C.S., 2, Phillimore-gardens, Kensington, Assistant Physician to the Chelsea Hospital for Women.
- 1882 TUKE, CHARLES MOLESWORTH, 37, Albemarle-street, W.
- 1868 TUKE, THOMAS HARRINGTON, M.D., F.R.C.P., 37, Albemarle-street, W. o 2.
- 1883 TWEDY, JOHN, F.R.C.S., 24, Harley-street, W., Assistant Ophthalmic Surgeon to University College Hospital.
- 1878 VASEY, CHARLES, 5, Cavendish-place, W., late Dental Surgeon to, and Lecturer on Dental Surgery at, St. George's Hospital.
- 1883 VENNIN, EDGECOMBE, F.R.C.S., 87, Sloane-street, S.W., late Surgeon 1st Life Guards.
- 1874 VERLEY, REGINALD LOUIS, F.R.C.P. Edin., 28B, Devonshire-street, Portland-place, W.
- 1850 WAGGETT, JOHN, M.D., F.R.C.S., 2, New-square, Lincoln's Inn, W.C.
- 1850 WAKLEY, THOMAS HENRY, F.R.C.S., 96, Redcliffe-gardens, South Kensington, S.W., Consulting Surgeon to the Royal Free Hospital.
- 1877 WALKER, GEORGE, 12, Lingfield-road, Wimbledon, Surrey, W.
- 1869 WALKER, JOHN SWIFT, M.D., Hanley, Staffordshire. ns.
- 1869 WALKER, JOSEPH, M.D., 22, Grosvenor-street, W., Dental Surgeon to Westminster Hospital; Lecturer on Mechanical Dentistry at the Dental Hospital of London.
- 1879 WALLER, AUGUSTUS, M.D., 26, Gordon-square, W.C.

- 1880 WALSHAM, WILLIAM JOHNSON, M.B., C.M., F.R.C.S., 27, Weymouth-street, W., Assistant Surgeon to, and Demonstrator of Practical Surgery at, St. Bartholomew's Hospital. *Councillor.*
- 1881 WARNER, FRANCIS, M.D., F.R.C.P., F.R.C.S., 24, Harley-street, W., Assistant Physician to, and Lecturer on Botany at, the London Hospital; Assistant Physician to the East London Hospital for Children.
- 1883 WATERHOUSE, WILLIAM DAKIN, LL.D., 18, Woodchurch-road, West Hampstead, N.W.
- 1872 WATERS, JOHN, 41, Bloomsbury-square, W.C.
- 1868 WATKINS, CHARLES STUART, 16, King William-street, Strand, W.C.
- 1863 WATSON, WILLIAM SPENCER, M.B., F.R.C.S., 7, Henrietta-street, Cavendish-square, W., Surgeon to the Royal South London Ophthalmic Hospital, and to the Great Northern Hospital. c.
- 1881 WATTESVILLE, ARMAND DE, M.D., M.A., B.Sc., 30, Welbeck-street, W., Electro-Therapeutist to St. Mary's Hospital.
- 1869 WEBSTER, FREDERICK RICHARD, St Albans, Herts. ns.
- 1878 WEISS, HERBERT FOUREAU, F.R.C.S., 30A, George-street, Hanover-square, W.
- 1882 WELLS, CHARLES, M.D., 13, College-crescent, Belsize-park, N.W.
- 1883 WELLS, JOHN ROBINSON, F.R.C.S., 20, Fitzroy-street, W. c 2.
- 1873 WELSH, JOSEPH, Knighton, Radnorshire.
- 1880 WHARRY, ROBERT, M.D., C.M., 6, Gordon-square, W.C.
- 1882 WHIPHAM, THOMAS TILLYER, M.A., M.B., F.R.C.P., 11, Grosvenor-street, W., Physician to, and Lecturer on Pathology and Practical Medicine at, St. George's Hospital. sm.
- 1884 WHISTLER, WILLIAM MACNEILL, M.D., M.R.C.P., 28, Wimpole-street, W., Physician to the Hospital for Diseases of the Throat and Chest.
- 1868 \*WHITE, JOSEPH, F.R.C.S. Edin., Oxford-street, Nottingham, Consulting Surgeon to the Nottingham General Hospital.
- 1880 WHITE, WILLIAM HENRY, M.A., M.D., M.Ch., M.R.C.P., 43, Weymouth-street, W., Assistant Physician to the Royal Hospital for Diseases of the Chest.
- 1883 WHITEHEAD, WALTER, F.R.S.E., 499, Oxford-road, Manchester, Surgeon to the Manchester Royal Infirmary.
- 1877 WHITMORE, WILLIAM TICKLE, 7, Arlington-street, Piccadilly, W.
- 1868 WIBLIN, JOHN, F.R.C.S., Southampton. ns.
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- 1883 WILLIAMS, JOHN, M.D., F.R.C.P., 11, Queen Anne-street, W.  
 1883 WILLIS, ARTHUR KEITH, Gascony House, West End-lane, N.W.  
 1881 WILLIS, CALEB SHERA, C.B., Surgeon-Major, Army Medical Department.  
 1873 WILLIS, THOMAS MUNNS, F.R.C.S.I., 44, Merton-road, Bootle, Liverpool,  
     Honorary Surgeon to the Bootle Hospital.  
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     Westgate-on-Sea. p, o, c 2.  
 1870 WILTSHIRE, ALFRED, M.D., F.R.C.P., "Torridon," Somers-road, Reigate,  
     Physician-Accoucheur to, and Joint Lecturer on Midwifery at, St.  
     Mary's Hospital. v.p, ll, s 2, c 3. Treasurer.  
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     14, Cavendish-place, W., Lecturer on Mental Diseases at Charing  
     Cross Hospital. c.  
 1876 WOAKES, EDWARD, M.D., 57, Harley-street, W., Senior Aural Surgeon to,  
     and Lecturer on Aural Surgery at, the London Hospital.  
 1882 WOLFENDEN, RICHARD NORRIS, B.A., M.B., 19, Upper Wimpole-street,  
     W., Lecturer on Physiology at Charing Cross Hospital.  
 1873 WOODHOUSE, ROBERT HALL, 1, Hanover-square, W., Surgeon to the  
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 1880 WOOLLETT, SIDNEY WINSLOW, Kessingland, Suffolk.  
 1873 WORDSWORTH, JOHN CAWOOD, F.R.C.S., 20, Harley-street, W., Con-  
     sulting Surgeon to the Royal London Ophthalmic Hospital. c 3.  
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 1870 ZIFFO, JEAN E., Constantinople. ns.
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- 1884 KEETLEY, CHARLES ROBERT BELL, F.R.C.S., 20, Prince's-street, Hanover-  
     square, W., Surgeon to the West London Hospital.  
 1884 MOULLIN, CHAS. WM. MANSELL, M.A., M.D., F.R.C.S., 69, Wimpole-  
     street, W., Medical Fellow of Pembroke College, Oxford, Assistant  
     Surgeon to, and Lecturer on Comparative Anatomy at, the London  
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 1884 TREVES, FREDERICK, F.R.C.S., 18, Gordon-square, W.C., Assistant  
     Surgeon to, and Senior Demonstrator of Anatomy at, the London  
     Hospital.  
 1884 WEBB, FREDERICK ERNEST, 113, Maida-vale, W.

*This List is complete to February 19th, 1884.*

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	Augustus Cooper Key.
	Andrew Clark.
	Benjamin Ephraim Manville.
	Francis Raworth Heycock, M.D., C.M.
	Robert Sydenham Fancourt Barnes, M.D.
	Charles Harris Tamplin.
	Alfred Curtis Routh.
	Charles Douglas Ferguson Phillips, M.D.
	Alexander Hampton Brewer.
	William Richard Gowers, M.D.
	Henry Sutherland, M.D.
	Samuel Cathcart.
	Henry William Williams, M.D., C.M.
	Charles Brodie Sewell, M.D., COUNCILLOR.
	Edward Woakes, M.D.
	Herbert Tibbits, M.D.
	Frederic Richard Fisher.
	J. M. Barnes, M.D. Hon. Fell.
	Austin Flint, M.D. Hon. Fell.
	Samuel D. Gross, M.D. Hon. Fell.
	Louis Auguste Mercier, M.D. Hon. Fell.
	Joseph Pancost, M.D. Hon. Fell.
	S. Weir Mitchell, M.D. Hon. Fell.
	S. Hamilton Cartwright.
	Richard St. Mark Dawes. Corr. Fell.
	J. De Muynck, M.D. Corr. Fell.
	Richard Glyn Griffith. Corr. Fell.
	Walter H. Leighton, M.D. Corr. Fell.
	Jose Leon. Corr. Fell.
	Richard Schmitz, M.D. Corr. Fell.
1877	John Charles Bucknill, M.D., F.R.S.
	George Walker.
	Richard Paramore.
	Sydney Lloyd Smith.
	William Tickle Whitmore.
	Dawson Nesbitt, M.D.
	William Ewart, M.D., COUNCILLOR.
	John Henry Drew, COUNCILLORE.

1877	Henry Edward Juler. Edwin Chisholm, M.D. Waldemar Joseph Roeckel, M.B., B.S. James Herbert Stowers, M.D. Marshall Monckton. A. Sanne. Hon. Fell.
1878	Thomas Sylvester Gell, M.D. Alfred Baldock, M.B., C.M. Andrew Brown, M.D. Edmund Owen, M.B., CHAIRMAN OF COUNCIL. Arthur Wellesley Edis, M.D. Robert Slater Mair, M.D. Louis Henry, M.D. Hubert Foveaux Weiss. Malcolm Alexander Morris. Sir Joseph Lister, Bart., D.C.L., LL.D., M.D., F.R.S. James Matthews Duncan, LL.D., M.D., F.R.S. Walter Pye. Sutherland Rees Phillips, M.D. William Lugar Mumford, M.D. Henry Francis Baker, COUNCILLOR. Julius Lawrence Hamilton. William Henry Allchin, M.B., F.R.S.E., HON. LIBRARIAN. Charles Barrett Lockwood. Henry de Fonmartin, M.D., B.Sc., B.Ch. Josiah Oake Adams, M.D. Charles Vasey. Alfred Pearce Gould, M.S., HON. SECRETARY. Samuel Benton, COUNCILLOR. Joseph Lamont Cassidy, M.D. Job Edwin Brooks. Fordyce Barker, M.D. Hon. Fell. Edward Milner. Henry Albert Reeves. John Dewar. William John Vereker Bindon, M.D., D.Sc., C.M. George Allan Heron, M.D.
1879	Richard Thomas Lyons. William Edward Balkwill. Sydney Coupland, M.D., COUNCILLOR.

1879	John Storrs Brookfield, M.D. " Thomas Colcott Fox, B.A., M.B. " Henry Bott. " William Murrell, M.D. " Arthur John Hogg. " Seton Guthrie Hamilton. " Henry Hugh Clutton, M.A., M.B. " Augustus Waller, M.D. " Heneage Gibbes, M.D., C.M., COUNCILLOR. " Samuel Woodman. " William Richard Huggard, M.A., M.D., M.Ch. " James Beresford Ryley, M.D. " Paul Hookham.
1880	Thomas Johnston English, M.D. " William Roberts. " Yelverton Dawson, M.D. " George William Parkinson. " James Waddell Jeffreys Oswald, M.D. " James Kingston Fowler, M.D., COUNCILLOR. " Frederick Steven Palmer, M.D. " Samuel Osborn. " Francis George Hamilton. " Noble Smith. " Edward James Nix, M.D. " Sidney Winslow Woollett. " William Gristock, M.D. " William Henry White, M.A , M.D., M.Ch. " Frederick Swinford Edwards. " Herbert Goude. " Richard Deane Roker Sweeting. " Charles Edward Beevor, M.D. " Henry Radcliffe Crocker, M.D., B.S., COUNCILLOR. " William Johnson Walsham, M.B., C.M., COUNCILLOR. " Robert Wharry, M.D., C.M. " Robert Peel. " Alfred Sextus Mackrell. " George Anderson Critchett, M.A. " Smith Houston Davson, M.D. " William Henry Netherclift. 1881 Amand Jules McConuel Routh, M.D., B.S.

1881	Daniel Henry Cullimore, M.D.
"	Stephen Mackenzie, M.D.
"	William Harrison Cripps.
"	Walter Campbell Blaker.
"	James Startin.
"	Alban Henry Griffiths Doran.
"	Donald William Charles Hood, M.D.
"	Thomas William Carmalt Jones, M.A.
"	Isambard Owen, M.A., M.D., HON. SECRETARY.
"	Charles Alfred Ballance, M.B., M.S.
"	Ieador Lyons.
"	Henry Bamberger, M.D. Hon. Fell.
"	John S. Billings, M.D. Hon. Fell.
"	Henry Jacob Bigelow, M.D. Hon. Fell.
"	Theodore Billroth, M.D. Hon. Fell.
"	J. M. Charcot, M.D. Hon. Fell.
"	J. M. Da Costa, M.D. Hon. Fell.
"	Thomas Addis Emmet, M.D. Hon. Fell.
"	Joseph Halla, M.D. Hon. Fell.
"	John Nepomuk Bitter von Nussbaum, M.D. Hon. Fell.
"	Auguste Aristide Verneuil, M.D. Hon. Fell.
"	Richard Volkmann, M.D. Hon. Fell.
"	James Jackson Gawith.
"	William Allen Sturge, M.D.
"	James Hill, M.D.
"	Edward John Parrott.
"	Henry Morris, M.A., M.B., COUNCILLOR.
"	Dennis Joseph William Dallaway.
"	Arthur Murray Oram, M.D., C.M.
"	Robert Bennet, M.D.
"	Francis Kennedy Dickson.
"	G. Lorimer, M.D.
"	Arthur Shipton.
"	Edwin John Sykes, M.B., C.M.
"	Caleb Shera Wills, C.B.
"	Francis Richardson Cross, M.B.
"	Charles Ross Hall.
"	Armand de Watteville, M.A., M.D., B.Sc
"	Jonathan Hutchinson, F.R.S.
"	John Langton.

1881	Jean Samuel Kaeser, M.D. James Black, B.A. William Peacey, M.B., C.M. Francis Warner, M.D. John Johnson, M.D. John Ebenezer Ranking, M.A., M.D. John Thornton Duncan. Thomas Henry Green, M.D. George Henry Hames. Perkins William Perkins Case, M.B., C.M. Kenneth William Millican, B.A. Frederick George Dawtrey Drewitt, M.A., M.D. John William Springthorpe, M.A., M.D.
1892	Thomas John MacLagan, M.D. Charles Ernest Ashton. Thomas Elliott, M.D. James Stewart, B.A. Alexander Stewart Brown. Walter Spencer Anderson Griffith. William Pitt Palmer. Thomas Michael Dolan. Bernard Pitts, M.B., M.C. Andrew Stanford Morton, M.B., C.M. Alexander Oberlin Mac Kellar, M.D., M.Ch. Charles Edward Sheppard, M.D., B.S. Fletcher Beach, M.B. Gerald Samuel Harper, M.B. Frank Colet Larkin, M.B., C.M. Robert W. Reid, M.D., C.M. Thomas Tillyer Whipham, M.A., M.B. John Cavafy, M.D. Thomas Thompson Pyle, M.D. Edmund Cuthbert Ring. Joseph Mills. Arthur Bristowe Carpenter, M.A., M.B. Joseph Brindley James. Thomas Frederick Hugh Smith. John Stephenson Harvey. Edward Joseph Day. Robert Alexander Gibbons, M.D., C.M.

<b>1882</b>	<b>Charles Molesworth Tuke.</b>
"	William Frederick Haslam.
"	Richard Norris Wolfenden, B.A., M.B.
"	Gideon George Gardiner, M.D.
"	Frederick St. George Mivart.
"	J. Sampson Gamgee, F.R.S.E.
"	Herbert Smith.
<b>1883</b>	<b>George Ernest Herman, M.B.</b>
"	Arthur Keith Willis.
"	Charles T. Rayley Owen.
"	Seymour Taylor, M.D., C.M.
"	William Robert Henry Stewart.
"	Walter Whitehead, F.R.S.E.
"	George Mowat.
"	Henry Singer Gabbett, M.A., M.D.
"	Cecil Yates Biss, M.A., M.B.
"	Walter Hamilton Hylton Jessop, B.A., M.B.
"	Thomas Whitehead Reid.
"	Charles St. Aubyn Hawken.
"	Sidney Philip Phillips, M.D.
"	Theodore Dyke Acland, M.A., M.B.
"	T. Mark Hovell.
"	Arthur Perrigal, M.D., C.M.
"	Charles Wells, M.D.
"	Gustavus Hartridge.
"	George Knapton.
"	E. Emond.
"	Charles Fillingham Coxwell, M.A., M.B.
"	John Frederick Joseph Sykes, B.Sc., M.B., C.M.
"	Edgar English.
"	Joseph Ewart, M.D.
"	Edgcombe Vennig.
"	Robert Barnes, M.D.
"	William Dakin Waterhouse, LL.D.
"	George Edward Paget, D.C.L., LL.D., M.D., F.R.S. Hon. Fell.
"	George Murray Humphry, M.D., F.R.S. Hon. Fell.
"	David Yaudell, M.D. Hon. Fell.
"	Alexander Stewart Brown.
"	Charles Alfred Ballance, M.B., M.S.
"	Edward Johnson Spitta.

1883	Edward George Peck, M.A. " Terence Joseph M'Gann. " John Robert Kemp. " Thomas Moore. " Thomas Pickering Pick. " William Henry Bull. " Richard Margerison, B.A. " David White Finlay, M.D. " John Desmond Ernest Mortimer. " Edmund Distin Maddick. " Daniel McClure Ross. " Frederick William Hewitt, M.A., M.B. " Edward Markham Skerritt, M.D., B.S. " John Williams, M.D. " Philip Francis Gilbert. " Joseph Skelding. " Angel Money, M.D. " James Dixon Bradshaw, M.A., M.B. " A. Le Roy de Méricourt, M.D. Hon. Fell. " John H. Morgan, M.A. " William Bruce Clark, M.A., M.B. " John Tweedy. " George A. Herschell, M.D. " Herbert William Allingham. " Frederick Bowreman Jessett. " George Town Penny, M.D. " Phineas Pitts Langford, M.D. " Francis Charles Compton. " Robert William Parker. " Clinton Thomas Dent. " William Henry Bennett. " Felix Semon, M.D. " James Murray, M.D.
1884	William Appleton Meredith, M.D., C.M. " Berkeley Hill, M.B. " Sir Henry Thompson, M.B. " William MacNeill Whistler, M.D. " Thomas Knight Salter. " Frederick Enos Fenton. " Frederick Treves.

LXXXIII

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|------|---|
| 1884 | Charles Wm. Mansell-Moullin, M.A., M.D. |
| "    | Charles Robert Bell Keetley.            |
| "    | Frederick Ernest Webb.                  |
| "    | Baron Larrey, M.D. Hon. Fell.           |

*This List is complete to February 19, 1884.*



## THE GENERAL MEETINGS.

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*July 11th, 1881.*

W. H. BROADBENT, M.D., President, in the Chair.

ON the recommendation of the Council the following gentlemen were elected Honorary Fellows of the Society:

Professor Bamberger, Dr. J. H. Billings, Professor J. H. Bigelow, Professor T. Billroth, Professor Charcot, Professor Da Costa, Dr. Emmet, Professor Halla, Professor Nussbaum, Professor S. Tarnier, Professor A. A. Verneuil, Professor R. Volkmann.

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*November 7th, 1881.*

W. H. BROADBENT, M.D., President, in the Chair.

ON the recommendation of the Council, the following alterations in the laws were agreed to:

In No. XX, to read "*The ballot shall be opened at 8 p.m., and closed at 9 p.m.*"

No. XXII, to read "Every Fellow balloting shall give his name to the President or to the Scrutineers, and afterwards deposit his list in the balloting box; but should any Fellow be unable to attend personally, he may return his list, which must not be signed, enclosed in a sealed envelope, with his name inscribed therein, to the President, at the Society's House, on or before the day of the election. The President or the Scrutineers shall deposit this list, with its seal unbroken, in the balloting box. Immediately upon the signing of the Minutes the President shall appoint three Scrutineers, whose duty shall be to take charge of the balloting box until the close of the ballot, when they shall report the result of the ballot to the President for announcement to the Meeting."

No. XL, Clause 3 to read "It shall meet, unless otherwise directed by the President, on the first Monday of every month except March, July, August, and September, at 7.45 p.m., or at any other hour named in the summons, and shall have the power of adjourning to any future day. Clause 4 to read "When the first Monday of the month is Easter Monday, the Meeting shall be held on the following Monday. A Council Meeting shall be held during the last week in February. In Clause 6, after "three" insert "clear."

No. XLI, to read "Each Member of the Council shall, on entering the Council-room and before taking part in the proceedings, sign his

name in a book kept for that purpose, and which shall be taken as evidence of his attendance."

No. LVIII to be expunged.

No. LXII, last clause, to read "*The Committee shall meet in May and November, and on such other occasions, as may be deemed necessary by the Hon. Librarian.*"

In No. LXVII, after "last" to read "two Mondays."

In No. LXIX h, after "for" to expunge "half an hour longer," and insert "for a period not exceeding half an hour."

In No. LXV, for "7.30" to read "8."

In No. XCVII, to insert after "fit." "*A Publication Committee of not less than three Fellows shall be appointed by the Council and shall meet in January and May, and at such other times as may be deemed necessary.*"

*March 6th, 1882.*

W. H. BROADBENT, M.D., President, in the Chair.

THE ballot for the election of Officers and Council for the year 1882, was declared open, and Dr. F. de Havilland Hall and Dr. Haward were appointed scrutineers.

The following report of the Council having been read was received and unanimously adopted.

*The Annual Report of the Council presented to the General Meeting,  
March 6th, 1882.*

The Council has much pleasure in laying before the Medical Society of London the Report of the year just expired, for regarded both from a scientific and financial aspect, it must undoubtedly be considered satisfactory.

The audited Balance-sheet presented by the Treasurer is evidence of the substantial position of the funds, and also shows that the financial progress which has for some time been observed has gone on uninterrupted.

It is a pleasure to be able to point out that the sum credited to the Society under the head of "Annual Subscriptions, &c.," has reached a higher total during the past year than at any previous time.

Moreover, the amount of rentals which have been received from the several tenants, as well as the payments made for the use of the rooms by scientific and other societies, continue to be a valuable source of income, and one which is undoubtedly capable of still further development.

The Society may well be content with the list of those who have recently joined its ranks. Apart from the increase to the roll of Honorary Fellows, as specified below, no fewer than forty-two Fellows have sought and obtained election. This fact, if it does not actually measure the success of the Society, at any rate indicates the increasing favour with which its work is regarded by the profession.

The revision recently effected in the law which relates to Fellows resident outside the Metropolitan Postal District has been sufficiently justified; for, during the short time that it has been in operation, sixteen

**Country Fellows** have availed themselves of its new clause, and it is fully expected that through its influence the usefulness of the Society will be materially increased, whilst the area of its scientific work will become more comprehensive.

Conspicuous amongst the Honorary Fellows will be the names of those upon whom the distinction was conferred in connection with the meeting in London of the International Medical Congress. The following gentlemen:—Heinrich Bamberger, Professor of Medicine at the University of Vienna; Henry J. Bigelow, Professor of Surgery at the University of Harvard; John J. Billings, Surgeon to the United States Army, Washington; Theodore Billroth, Professor of Surgery at the University of Vienna; J. M. Charcot, Professor in the Faculty of Medicine, Paris; J. M. Da Costa, Professor of Medicine, Jefferson Medical College, Philadelphia; Joseph Halla, Professor of Medicine, at the University of Prague; John Ritter von Nussbaum, Professor of Surgery, University of Munich; S. Tarnier, Professor of Obstetric Medicine at the Faculty of Medicine of Paris; Thomas Addis Emmet, Surgeon to the Women's Hospital, State of New York; Auguste Aristide Verneuil, Professor of Surgery at the Faculty of Medicine of Paris; Richard Volkmann, Professor of Surgery at the University of Halle, were selected by a committee, and were, on the recommendation of the Council, unanimously elected by a special general meeting. Upon the occasion of the reception of these Honorary Fellows in the rooms of the Society, the diplomas, prepared for the purpose, were handed to them by the President, to whom the Council has specially signified its grateful appreciation of the hospitality which he then displayed in the name of the Society.

The fifth volume of the ‘Proceedings’ now in the hands of the Fellows has attained considerable dimensions, notwithstanding the fact that all the discussions upon the papers and cases are for the first time printed in small type. It was thought well that the communications should be published in the ‘Proceedings,’ irrespective of their having appeared in print elsewhere. Moreover, the Annual Report of the Council together with that of the Honorary Librarian and the Treasurer’s Audited Balance-sheet, have been embodied in the volume for the information of the Fellows.

In reviewing the many items of sessional labour the debate upon the treatment of acute rheumatism by the salicyl compounds stands conspicuous. The able introduction by Dr. Hilton Fagge augured well for the success of a discussion which, amassing, as it did, an unprecedented amount of statistics in confirmation of the various conclusions arrived at, cannot fail to exert an influence upon the clinical study of rheumatic fever.

The Council has much pleasure in making the announcement that, acting upon the decision of the Fothergillian adjudicators it has awarded the Fothergillian Gold Medal to Mr. Thomas Michael Dolan, of Horton House, Halifax, for his essay on the ‘Pathology and Treatment of Whooping Cough,’ which will in due course be read before the Society.

A revision by the Medical Referees of the communications laid before the Fellows during the year has led the Council to confer upon Dr. William Allen Sturge the Silver Medal of the Society as a well-merited token of its special appreciation of his paper, “On the Study of Muscular Atrophy as an aid to the Physiological Investigation of the Spinal Cord.”

## LXXVIII

A similar honour has also been unanimously voted to the retiring secretary, Dr. Gilbart Smith, for the valuable services rendered by him during his period of office.

For the post of Honorary Secretary for Foreign Correspondence, which had become vacant, Sir William MacCormac was nominated, and his acceptance of the office has met with a feeling of general satisfaction.

This Report would manifestly be incomplete were no mention made of the manner in which the President has exerted his influence upon the work and conduct of the Society; and it gives the Council the most sincere pleasure here to place on record its high appreciation of all that Dr. Broadbent has been, and all that he has done during his year of office. Not only has he occupied the chair at each ordinary meeting; but he has also ungrudgingly placed himself and his practical wisdom at the disposal of the various working committees which in his year have been most numerous.

With equal tact and courtesy he has directed the lines and times of debate, and, on vacating the chair, he will have the satisfaction of knowing that the Society is in a state of good-fellowship and vigour that probably has not hitherto been surpassed.

The Treasurer, Mr. FRANCIS MASON, then read his Annual Report and submitted the audited Balance Sheet; which was duly received and adopted.

The Librarian, Mr. HUTCHINSON ROYES BELL, next read his Report and its adoption was also carried.

### *The Report of the Honorary Librarian.*

MR. PRESIDENT AND GENTLEMEN.—Since the publication of the last Annual Report, the members of the Library Committee have been called together on several occasions. An inspection has been recently made of the book presses, and we have to report that the books are in good condition. Different plans for the extension of the Library were discussed at the last meeting of the Committee, as the space now available is far from satisfactory; it was, however, unanimously resolved that action in the matter should be delayed for the present.

We have in hand a large sum of money generously voted by the Fothergillian Trustees for the purchase of books, but unfortunately we lack proper space for the suitable storage of the volumes.

The Council have opened a Subscription at Messrs. Lewis' Medical Library, and thereby obtained an ample supply of new books. The donations of books have not been so numerous this last year as in the year before.

The Library has been well attended by readers, and a larger number of books borrowed for home perusal.                   H. ROYES BELL,

*March, 1882.*

*Hon. Librarian.*

The subject for the Fothergillian Essay for the year 1884 was then announced to be:

*"The degenerative changes affecting the cerebro-spinal centres and the symptoms attending them."*

It was also announced that the gentlemen whose names had been sent up by the Council had been duly elected to their respective offices.

THE MEDICAL SOCIETY OF LONDON.—BALANCE SHEET, 1881-82.

	RECEIPTS.	1881	PAYMENTS.
	£ s. d.	£ s. d.	£ s. d.
To Balance from last Account .	61 12 2	By Rent, Gas, Coal, Rates, Taxes, and Insurance	221 14 8
" Subscriptions and Arrears .	359 2 0	" Library Expenses .	11 17 10
" Life Compositions .	26 5 0	" Grants .	62 9 9
" Entrance Fees .	27 6 0	" Salary, Registrar's, and attendance at extra	
" Rents .	298 7 6	Meetings .	104 8 0
Contributions for use of Rooms .	32 11 0	" Law Expenses .	6 18 10
" Interest .	3 0 8	" Collector's Foundsage .	20 12 6
		" Printing .	10 18 6
		" House Repairs and Furniture .	38 12 4
		" Current Expenditure (including Wages, Postage, Stationery, Advertisements, Refreshments at Meetings, Bankers' Charges, and Bookbinding) .	91 17 0
		Balance .	238 14 11
			<hr/>
			£798 4 4

(Signed) FRANCIS MASON, Treasurer.

Examined, compared with the Vouchers, and found correct,

(Signed) J. C. WORDSWORTH,  
ISAAC OWEN, M.D., } Auditors.

6th March, 1882.

*November 6th, 1882.*

**FRANCIS MASON, F.R.C.S., President, in the Chair.**

On the recommendation of the Council the following additions were made to Law XIV:

1. *Fellows of forty years' standing shall also be exempted from further payment.*
  2. *Fellows residing beyond the Metropolitan Postal District, who shall pay the sum of Five guineas in addition to any entrance fee and subscription then due, shall be exempted from all further payments, so long as they shall continue to reside outside the Metropolitan Postal District.*
- 

*March 5th, 1883.*

**FRANCIS MASON, F.R.C.S., President, in the Chair.**

THE Ballot was declared open at 8 o'clock, and Dr. Sidney Coupland, Dr. F. de Havilland Hall, and Dr. T. Gilbart Smith were appointed Scrutineers.

The Hon. Secretary then read the Annual Report of the Council which was received and adopted:

*The Annual Report of the Council presented to the General Meeting,  
March 5th, 1883.*

THE sessional year of the Medical Society of London which is just ending, may be considered to have been marked by one of the most important events of its existence; in that it has at last secured for itself thoroughly suitable premises upon a long and favorable lease.

A short explanation of the purport of this sentence may perhaps be desirable:—When the Society migrated from George Street, Hanover Square, in the year 1873, it was granted a lease of No. 11, Chandos Street, Cavendish Square, for twenty-one years at a rent of £150 per annum. Half of this term having already expired the Council were becoming anxious to have set aside a sum of money which should be available for meeting the necessary expenses of renewing the old lease, or, failing that, of securing fresh premises. The agents of its landlord, the Earl of Gainsborough, had, indeed, already intimated to the Council that on the expiration of the old lease a new one would be obtainable only at a double rental. The sum of money which was thus being put by had amounted to but £100, when, at the death of the late Earl, the adjoining tenement, No. 11A, Chandos Street, or as it will henceforth be known, No. 12, Chandos Street, fell vacant, and was, subject to certain conditions, offered to the Society at an annual rent of £150. One of the conditions was that no lease would be executed until the Society had converted the tenement into a substantial building; subsequently the old lease was to be cancelled and a new one of sixty years for the two houses, Nos. 11 and 12, Chandos Street, was to be executed at a rental of £300 per annum; the covenants and conditions of the new lease remaining similar to those contained in the old one. This

offer was, after due deliberation, accepted, and the trustees of the Society, at the authorisation of the Council, entered into an agreement for the new lease. In order to facilitate the conclusion of the important negotiations connected with the acquisition of the new premises and the carrying out of the structural alterations, a "Lease and Building Committee" was appointed by the Council, to each member of which, and especially to its Chairman, Mr. Bryant, the Council desire to express its indebtedness. One of the first acts of this Committee was to obtain the services of an architect, so three gentlemen who were well known to certain members of the Committee, were invited to inspect the premises and to submit their respective plans for criticism. The result of this competition was the appointment, as architect, of Mr. Henry Cowell Boyes, of No. 9, Bow Church Yard, whose designs for the alteration and partial reconstruction of the entire block, with certain modifications, appeared best to meet the requirements of the Society. Of the seven tenders for the building, the lowest, that of Mr. Green, of Clapton (£3395), was accepted.

Then arose the important question of Finance; the expenditure of a sum of £2000 would be required before the Society could be in a position to obtain the new lease, and neither the agreement for the lease nor the old lease, which was shortly to be surrendered, could afford negotiable security. In these circumstances one of the Honorary Secretaries privately laid the entire case before a former President of the Society, Sir Erasmus Wilson, who at once offered to place at the disposal of the Council the sum of which they stood in need, at a rate of interest which was as nominal as the security with which they were in the position to supply him. The works are now more than half finished, and it is hoped that the whole of the building will be ready for occupation during the ensuing summer. But before that time the entire cost of the alterations, together with the kind loan to which allusion has just been made, as well as the many items of incidental expenditure, will be cleared off by effecting a mortgage upon the lease which the Council are upon the eve of obtaining.

Bearing in mind the fact that No. 11, Chandos Street, was not originally constructed as a home for the Medical Society, it must be conceded that the house has been made to adapt itself to its requirements excellently well, but those Fellows who have from time to time been connected with the internal administration have been made fully aware of the existence of many serious defects and deficiencies; among the former may be mentioned the general disrepair and the insanitary condition of the drainage system. As to the deficiencies, it will suffice to say that the method in which valuable books have had to be stowed away on dark and inaccessible shelves, from basement to garret, has been not only unbecoming in such a library as that possessed by the Medical Society of London, but also a matter of considerable inconvenience to both registrar and readers. By the new arrangements, as will be seen from the Report of the Honorary Librarian, the volumes will soon be stored in a worthy and convenient manner.

In order to meet the interest on the mortgage and the enhanced rental, the Council have concluded sub-lettings of portions of the premises not needed for the Society's purposes at an aggregate rental of about £500.\*

\* This sum includes a portion of the rental gained by letting the meeting-room on nights not occupied by the Society's meetings.

There still remains unengaged a commodious room upon the first floor of No. 11, Chandos Street, and in close proximity to the present meeting-room.\*

The accommodation which is to be retained for the Society's own use will include (besides a spacious entrance hall, staircase, and landing):

(1) An entirely new Meeting-room 37 feet by 28 feet, and in height of due proportion.

(2) The present Meeting-room, which will be converted into the Library.

(3) A small inner Library.

(4) A cloak-room and complete lavatory arrangements, and

(5) A suite of apartments, with kitchen and needful offices, which will be occupied by the Registrar.

The Council, whilst expressing regret that it was found impossible to keep the Library open, or even accessible, during the progress of the alterations, have, on the other hand, considerable satisfaction in reminding the Fellows that the regular course of the weekly meetings of the Society has throughout been preserved from interruption.

The Treasurer's audited Balance Sheet and Report will show that the Society is in a condition of financial prosperity, and the fact of there having been forty-seven Ordinary Fellows elected during the year—a number it may be remarked which is without precedent in the annals of the Society—gives good augury for the future.

Four Fellows have resigned their connection with the Society, and death has removed four others from its ranks, viz. Joseph Thomas Clover, Robert Risdon, Edwardes Crisp and Alfred Ebsworth. Dr. Crisp was received into the Society just half a century ago, and, working with untiring industry in the attractive field of comparative pathology, as well as in the wearying one of private practice, he managed to secure both the Astley Cooper Prize and the Jacksonian Prize of the Royal College of Surgeons, and each of them on two occasions. Long since he was awarded the Silver Medal of this Society for distinguished services, and, when in his sixty-sixth year, he was the happy possessor of so much intellectual vigour and energy that his Essay on "Croup and Diphtheria" obtained for him the Fothergillian Medal of the Medical Society of London.

The Council regret to have to report that the roll of the Honorary Fellows is poorer by the death of Sir Robert Christison and Sir John Rose Cormack.

In the scientific and practical work which has been accomplished during the year the Society has fully maintained its reputation, and it is worthy of note that, notwithstanding, the state of general discomfort caused by the alterations which have been taking place throughout the entire premises, the meetings have been well attended.

Indeed, as the highest compliment which the Council are able and anxious to pay to the retiring President, Mr. Francis Mason, they would assure him that under his genial and worthy occupancy of the Chair the Society has flourished in the matter of scientific work, as in every other respect, in the most unmistakable and desirable manner. Mr. Mason has served the Society well, and, having been loyal to its best traditions, it will be a matter of extreme satisfaction to him, as certainly it is to the Council, to know that in the chair which he is

\* Since let, with occasional use of the meeting-room, for £100 a year.

about to vacate he is to be followed by so illustrious a Fellow as Sir Joseph Fayrer.

The Council report that they have awarded the Fothergillian Gold Medal to Mr. Norman Porritt, of Huddersfield, a Silver Medal to Dr. Whipham for his able paper on "The Association existing between Tuberculosis and Bacilli," and a Silver Medal to the retiring Secretary, Mr. Edmund Owen, in recognition of the services which he has rendered to the Society.

In conclusion, the Council wish to express their appreciation of the readiness and zeal with which the Registrar has been working in the interests of the Society; and they would also cordially thank Mr. and Mrs. Poole for the graceful manner in which they have of late placed their private apartments at the service of the Society.

**Dr. W. H. ALLCHIN**, the Honorary Librarian, then read the Librarian's Annual Report.

*The Report of the Honorary Librarian.*

**Mr. PRESIDENT AND GENTLEMEN**,—The Report for the past year that I have, as Honorary Librarian of this Society, the honour to lay before you, is one that rather expresses hope for the future, than a record of work done. The wise course that the Society has taken in extending our buildings will show itself in no department more favorably than in the Library. It is obvious, however, that the rebuilding could not have been carried on without offering much obstruction to the proper working of the Library, and it has been found absolutely necessary to all but close it. The removal of the cases and contained volumes from the many parts of these premises in which they have been scattered, into their new quarters, is being proceeded with, every care being taken for their preservation. When this is completed, and the entire available space for books is actually before the Library Committee, the very considerable work of rearrangement will have to be entered upon. Meanwhile the plans for the new book-cases are being considered.

I confidently believe that before our next Annual Meeting the Fellows of this Society will, for the first time, be enabled to see the exact extent of their books, and will be furnished with accommodation which will render their Library where it should be, in the first rank.

Notwithstanding the condition of our Library the donations this year have exceeded in number those for many years past; due in no slight measure to the personal exertions of our President. Nevertheless, I venture to take this opportunity of appealing to the Fellows to help to fill our increased space by any books they can spare.

Duplicates, odd volumes or journals are all acceptable, often completing our own series, or are available by exchange or otherwise for adding to our shelves.

The Society is much indebted to the great energy and zeal with which Mr. Poole, their Librarian, has carried out the very great labour of removal.

Appended is a list of donors to whom the thanks of the Society are due.

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Dr. Alvarenga.	Mr. E. L. Hussey.	Dr. Sansom.
Dr. G. Badaloni.	Dr. Thomas Keith.	Mr. Henry Smith.
Mr. Barwell.	Mr. Lund.	Mr. Noble Smith.
Dr. Bernays.	Mr. Mason.	Mr. P. Squire.
Dr. Billings.	Dr. Meadows.	Dr. Symes Thompson.
Dr. Bristowe.	Dr. Mickle.	Sir Spencer Wells,
Mr. Coleman.	Mr. Nettleship.	Bart.
Mr. Coulson.	Dr. Norris.	Mr. W. Whitehead.
Dr. Coupland.	Mr. Nunn.	Dr. Wiltshire.
Dr. Dolan.	Mr. S. Osborne.	Council of Ophthalmological Society.
Mr. Alban Doran.	Dr. I. Owen.	Council of St. Thomas's Hospital.
Mr. Gay.	Dr. Pollock.	
Mr. A. P. Gould.	Dr. Quain.	
Dr. Greenhill.	Dr. Restrepo.	
Prof. Halla.	Mr. E. Sanders.	

W. H. ALLCHIN,

March 2nd, 1883.

Hon. Librarian.

The Treasurer, Dr. Alfred Wiltshire, then read the Treasurer's Annual Report, and submitted the audited Balance Sheet.

This was also duly received and adopted.

The Council was requested by the Meeting to name a subject for competition for the Fothergillian Gold Medal for 1885, without further reference to the general body of the Fellows, the subject proposed by them having been already anticipated by the Council of the Royal College of Surgeons.

The Ballot was then closed and the gentlemen proposed by the Council as Officers were declared duly elected.

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THE ANNUAL ORATION,

"On the Present Bearing of the Antiseptic Question," was delivered on Monday, July 2nd, by the Orator, Professor EDWARD LUND, of Manchester.

A vote of thanks to the Orator was carried by acclamation.

THE ANNUAL CONVERSAZIONE,

held after the delivery of the Oration, was honoured by the presence of H.R.H. THE PRINCE OF WALES.

THE MEDICAL SOCIETY OF LONDON.—BALANCE SHEET. 1882-83.

RECEIPTS.		PAYMENTS.		
		£	s.	d.
1882	To Balance from last Account	238	14	11
" Subscriptions and Arrears	354	18	0	
" Entrance Fees	36	4	6	
" Life Composition	10	10	0	
" Rents	297	19	11	
" Contributions for use of Rooms	25	14	6	
" Interest	3	0	8	
	By Rent, Gas, Coals, Rates, Taxes, and Insurance	348	17	8
	" Library Expenses	25	4	9
	" Architect's Plans and Travelling Expenses	11	15	0
	" Grants, Diplomas, and Medals	39	11	2
	" Salary and extra attendance of Registrar	106	0	0
	" 'Proceedings,' cost of Vol. V	146	10	5
	" Collector's Poundage	20	1	7
	" Printing	10	12	6
	" House Repairs	23	8	6
	" Current Expenditure (including Wages, Postage, Stationery, Advertisements, Refreshments at Meetings, Bookbinding, and Bankers' Charges)	87	0	4
	" Balance	148	0	7
		3967	2	6

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HENEAGE GIBBES, M.D.,  
W.M. HENRY WHITE, M.D., } *Auditors.*

(Signed)

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VOL. VI



## PROCEEDINGS

OF THE

# MEDICAL SOCIETY OF LONDON.

109TH SESSION.

*October 17th, 1881.*

### OPENING ADDRESS

By the President, W. H. BROADBENT, M.D.

GENTLEMEN,—The moment has arrived at which I must say a few words before we enter upon the serious business of the session. Nothing has occurred which so forcibly brings home to my mind the fact that a new medical year has begun as to find myself once more in this chair, and contemplating six months of what we hope will be real work. I must admit that my pleasure in seeing you all here is considerably mixed with anxiety, and it seems to me that anxiety must be the predominant feeling of anyone who is charged with the conduct of a Society like this for a session. A fruitful or unfruitful session of the Medical Society is a matter of real importance. It must, it appears to me, make a difference to many sufferers that men meet here and learn week after week from their fellows new means of affording relief, either by the papers or by the conversations which spring up; and although one can hardly say that the course of science or of medical knowledge would be interrupted by an unfruitful session, yet unquestionably it would be postponed, and the honour of helping it forwards would belong to others instead of to ourselves. If a society such as this falls short of its duty in the way of vigour or energy, then papers which would find

their place here would go elsewhere, and the Society would thus, through the fault of its Fellows or of its officers, lose credit which otherwise might have come to it. The work of a Society like ours is mainly, of course, that of organising professional thought and professional opinion. It is a work that cannot be done by any other means ; and although, perhaps, greater contributions to our knowledge eventually come more directly through the press, still the seeds of much of that knowledge have already been sown here ; it is in the meetings here that much of what in course of time is elaborated elsewhere in papers and books is originally brought out. What happens is that young men, and obviously men further on in life, accumulate by their work, by their thought, and by their observation, a store of what we may call latent force, and then to this fuel there is applied the torch of an energetic secretary, and we all enjoy the benefit of the light and heat it gives. The work of preparing a paper for a Society like this is in itself a very considerable benefit to the author. There is nothing like putting down one's thoughts on paper ; it reveals to a man many an unexpected gap in his observations or weak point in his chain of reasoning ; but also it often leads to further development of his ideas, and opens out new suggestions. Then the paper comes before the Society, it is met with criticism—with approval or with question—and the author, if he is not encouraged in the maintenance of his opinions is put upon his mettle, and is made to work to establish his point or to correct his previous impressions. More than all, I think, however, the work of a Society like this is the good feeling which it promotes, the heightening of the interest in our work, the generation of enthusiasm by the contact of man with man, and by the communication of thought with thought. We hope that the Society will not fall short of these aims in this the coming session. During the short time that I have had the honour of presiding over the Society, as I see on looking through the list of papers read, there has not been a single evening which has not been marked by communications of really high value. On the first evening we had some most interesting cases of hypertrophic paralysis presented by Dr. Dowse and Dr. Crocker. On the second evening we had an extremely valuable case of verrucose endocarditis by our secretary, Dr. Gilbert Smith, a case which none of us could hear, illustrated, as it was, with preparations, without learning something. Then, on the next meeting, we had a case of syphilitic meningitis by Dr.

Stephen Mackenzie. On the fourth evening there was a paper on tubercular meningitis by Dr. Day. On the fifth evening, Mr. Reginald Harrison, from Liverpool, read a communication on acute prostatitis, and at our last ordinary meeting we were favoured by Dr. Allen Sturge with a paper on the study of muscular atrophy as an aid to the physiological investigation of the spinal cord, one of the most thoughtful contributions it has been my lot to listen to in connection with any society. Finally, we had the suggestive oration of Mr. Arthur Durham. Now, in speaking of these papers, it is impossible to convey any idea of their merit, but every one of them was of remarkable interest and value; and if even from time to time in the course of the remainder of the session we have papers of this class, as I hope and believe we shall, I shall close my period of office with a feeling of extreme gratefulness and pleasure.

The expression I used, that we were beginning a new medical year, would naturally lead one to review to some extent the medical year that is passed, but that I shall not do in any detail, indeed, the only event that I think it worth while to allude to is the International Medical Congress, which we may claim to have been the most brilliant possible success. We expected great results, for many had worked hard to achieve them, yet I think we may say that our success surpassed all anticipations. The Congress was one of those meetings which it is impossible beforehand to realise in imagination, so great and so continued was the enthusiasm throughout. I hope and think that our own Society played a not unworthy part. It took the opportunity of electing a certain number of honorary fellows from among those who were expected to be present. The list of these honorary fellows comprises Bamberger, Billroth, Emmet, Da Costa, and Nussbaum, who unfortunately were unable to attend, Bigelow, Billings, Charcot, Halla, of Prague, Tarnier, Verneuil, and Prof. Volkmann. The distinguished surgeon, Prof. Basynaud, was also one of those elected, but, as is well known, he died before reaching the Congress. The formal reception of the newly-elected Fellows took place on the Friday of the Congress week, and almost all the Honorary and Corresponding Fellows, whom we already had the satisfaction of counting amongst our number, manifested by their attendance the interest which they felt in the occasion. I am sure the Society has in its selection most worthily filled up the gaps left by the decease of Rokitansky, Hebra, and others. A great event

like the Congress may have either a stimulating or a depressing effect. I trust that with the societies of London, as certainly with many individuals, the effect will be to stimulate work of all kinds, and to raise altogether the tone of the profession.

We begin now the work of the session with a paper by Mr. Jonathan Hutchinson on "Diseases of the Tongue," and I am sure it could not be more worthily inaugurated.

### ULCERATION OF TONGUE.

By JONATHAN HUTCHINSON, F.R.S.

MR. JONATHAN HUTCHINSON prefaced his paper by remarking that he would not attempt any elaborate citation of clinical evidence, but rather endeavour to bring out prominently some of the more important features of ulceration of the tongue with a view to discussion. He would leave out all accounts of acute and congenital affections, and restrict his attention solely to the effects of chronic inflammatory action. He then proceeded to lay down lines for the differential diagnosis of syphilitic and non-syphilitic sores, and referred to the influences, local and general, which might compete with or complicate the "great mother of maladies" in the production of the lesions in question. He passed in review the various names given to the different pathological conditions, finding especial fault with the terms "mucous patch" or "plaque muqueuse," and challenged defence of the name "ichthyosis." He remarked that the conditions to which the term had been applied were simply exaggerated examples of chronic glossitis, and had no analogy to true ichthyosis linguae. Ichthyosis linguae might, however, exist as a part of a general and congenital condition. So with the term psoriasis linguae, it should only be used in cases in which it is associated with a general eruption. The forms of glossitis which occurred in the secondary stage of syphilis are as variable as are those of the skin eruptions. He then treated of the abraded patch—a superficial ulcer; of the papillary patch; the bald patch, and the circinate patch.

First among the causes of chronic glossitis must come, of course, syphilis, but the tongue was also apt to be irritated by certain articles of food, by alcohol, drugs, tobacco-smoke, by rough teeth, or by

teeth filled with amalgam. Effervescent waters taken in excess, and also cheese and sugar, were, in certain cases, of prejudicial influence.

Amongst the most common results of irritation were wasting of the papillæ and thickening of the basement membrane, denoted first by bald patches, and subsequently by bluish white ones; with these might be seen fissures or ulcers as conditions of temporary aggravation. Mercury was well known as prone to cause ulceration.

All forms of disease of the tongue are much more frequent in men than in women, and with the exception of sores produced by dental irritation, well-marked examples of leucomata in women were rare. So also was cancer of the tongue rare with them.

He drew a comparison between certain syphilitic patches and those of disseminate choroiditis.

He then went on to speak of that peculiar condition which he termed the "fern-frond pattern," and ended his address with a few remarks upon the diagnosis and treatment of cancer of the tongue, adverting to the manner in which chronic glossitis may serve as a precursor of malignant processes.

Mr. MASON was interested in learning Mr. Hutchinson's opinion that many of these cases of white-patched tongue were not of syphilitic origin. That opinion coincided exactly with his own. He had seen white patches in the mouth produced by red vulcanite plates.

Mr. BRYANT was glad that Mr. Hutchinson affirmed that many of the diseased patches were but the result of inflammation. He (Mr. Bryant) was also of opinion that syphilis was the chief cause of the inflammation, but that not a few of the cases were marked by dyspeptic or some other troubles. He had known a case of chronic glossitis, with induration and infiltration, in a man who passed enormous quantities of lithic acid. The man had suffered from disease of the tongue for eighteen years, but he was a water-drinker and not a smoker. He did not think that all cases of leucoma of the tongue were secondary to inflammation, but that they might come on slowly, and as new papillary growths. Some patches were associated with considerable changes in the deeper parts, and some showed many of the characteristics of epitheliomatous infiltration. He also thought that in these old cases of atrophy and other diseases of the tongue no specific treatment did good. In suspicious cases he was in favour of early and energetic treatment.

Dr. RADCLIFFE CROCKER referred to the paper read at the Congress by Professor Ernst Schwimmer on the subject, pointing out that many of the cases were not of syphilitic origin. He had never seen such cases associated with ordinary psoriasis.

Mr. BUTLIN agreed that mercury was of no avail in the old syphilitic lesions of the tongue. He had seen associated conditions of eruptions

upon the hands and upon the tongue. He was not inclined to agree with Mr. Hutchinson that in the smooth tongue the epithelium was increased in quantity. On the contrary, he believed that the smooth tongue was rather in the condition of scar tissue, and he traced a close connection between the scar tissue and an epitheliomatous infiltration.

Mr. HUTCHINSON, in reply to a question by Dr. Berkart, said that he had purposely left out reference to parasitic patches upon the tongue. He wished to imply that most of the leucomatous patches came after inflammation, but that no doubt some appeared with the very smallest amount of inflammation. Red vulcanite, like any other irritant, might produce an initial inflammation. The ulcers occurring in association with indigestion constituted an important group, but he had not had time to refer to them. He did not differ much from Mr. Butlin, but objected to his application of the term "smooth tongue." He referred to the value of Mr. Fairlie Clarke's work upon the subject. He had seen but one case of epithelioma which took its origin in scar tissue; it was rather the chronic inflammatory irritation that was the starting-point of malignant disease.

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*October 24th, 1881.*

#### A HEALTHY HEART, FROM A CASE OF ACUTE RHEUMATISM IN WHICH A BASIC MURMUR WAS PRESENT.

By ISAMBARD OWEN, M.D.

ST. GEORGE'S HOSPITAL Medical Cases, 1880, No. 691.—The case was one of acute multi-articular rheumatism, in a woman, aged 28, with profuse sweating, but no redness or noticeable swelling about the joints. It was of twenty-five days' duration. The patient was admitted on the fourth. The heart's action was then described as "irritable," but no bruit was detected. On the 5th day a soft systolic murmur was heard over the whole cardiac area, culminating in the second left intercostal space. The pulse was hard and jerky. The murmur persisted, becoming louder and rougher, but preserving the same localisation, throughout the case, the last examination being made the day before death.

The articular affection did not abate under treatment (full doses of alkali, with quinine), the temperature ranged from 100° to 108°, and the patient's strength steadily declined, a bedsore forming over the sacrum. From the 22nd day the temperature ranged from 102° to 106°, and the patient sank rapidly.

*Thirty-two hours after death.*—The heart weighed eleven ounces, was quite uncontracted, and nearly empty, containing only a little soft dark (recent) clot. The walls of the ventricles were somewhat thin at the apex, and the muscular tissue softer and paler than natural. The valves were perfectly healthy, glossy on the surface, and normally transparent. The edges of all the auriculo-ventricular flaps were thin and delicate throughout. No trace of beading or vegetation was discovered. Under the microscope the muscular fibre was seen to be also perfectly healthy.

(The heart was shown, preserved in spirit. St. George's Hospital Museum, Preparation No. 3611.)

The PRESIDENT observed that the case was interesting from the fact that death did not occur from the usual complications of acute rheumatism. The site of the bruit suggested its haemio origin, and he asked if the woman had been subjected to extreme privation previous to death, and also as to the nature of the treatment adopted.

Dr. OWEN replied that alkalies and quinine were given. The history of the case previous to admission was incomplete.

#### NON-PARASITIC PUSTULAR ECZEMA.

By HEEBERT STOWERS, M.D.

DR. STOWERS exhibited a man, æt. 51, the subject apparently of a non-parasitic pustular eczema of the chin, but careful microscopical examination of the hairs of the beard revealed the presence of the *Trichophyton tonsurans*, the fungus of common ringworm, and not that alleged to occur sometimes in parasitic sycosis. The disease had probably been contracted at a barber's shop. He thought the parasitic nature of the disease was frequently overlooked, for its detection required most patient microscopical examination.

#### A CASE OF SUPPURATION OF THE KNEE-JOINT, ASSOCIATED WITH PHthisis.

AMPUTATION; RECOVERY, WITH DISAPPEARANCE OF CHEST SYMPTOMS.

By THOMAS BRYANT, F.R.C.S.

CHARLES W—, æt. 23, a footman, was admitted on May 12th, 1881, into Job Ward under Mr. Bryant's care. In February, 1878

he jumped from a loft about ten feet, and at the time felt no ill effects. About ten days afterwards he became feverish and very weak ; he perspired a good deal, and had a bad cough. For three months he kept his bed. In August he went into the Canterbury Hospital, where he was told he had rheumatism in his knee. His leg was dressed with spirit lotion, and in a fortnight he was discharged. For three months he was in good health ; the swelling had entirely disappeared from his knee, which he was able to bend. His knee, however, soon began to swell again, and became hot and painful. In July, 1879, he was admitted into Guy's, when his knee was swollen, and felt pulpy to the hand. It measured 14·25" against right 12·75". There was no fluctuation, but pain on pressure over the femoral condyles. There was then dulness at the base of the left lung. The knee was blistered and a posterior splint was applied. He was discharged August 27th, wearing a Bavarian splint to ensure immobility of the joint, and with an elastic bandage beneath it for purposes of pressure. He wore his splint for two months, when his knee being much better he discontinued it. He was then able to bear his weight on his leg and bend the knee, and so resumed work.

Six weeks ago he jarred his knee when coming downstairs. The accident caused him much pain, and the joint in about two hours after swelled a good deal. He could, however, use the limb. The joint has since steadily grown worse. He has had hæmoptysis for the last three years, and a bad cough in winter. He perspires much at night.

On admission, May 12th, 1881, the knee was much swollen and displaced backwards, the tissues around being very œdematosus. The joint was clearly disorganised. The man looked very ill and thin, and had a bad cough. There was dulness over both apices in front, and "cogged" inspiration at both apices, but it was most marked on the left side. There was prolonged expiration and bronchial breathing at the left apex. Good resonance and vesicular murmur at the bases. He had had a good deal of hæmoptysis, and his expectorations were muco-purulent.

June 7th.—Under chloroform his leg was amputated ; an Esmarch bandage having been applied as a tourniquet after elevating the limb ; antero-posterior flaps were made. The anterior one was made by a semilunar incision reaching to about two inches below the condyles. The posterior flap was made by transfixion. The bone

was sawn through above the condyles. All the vessels were twisted, except one large vein, which was ligatured with carbolised gut. Great care was taken to stop all oozing, by the use of sponges wrung out with hot iodine water, that quick union might ensue. The flaps were brought together by silk sutures, one inch apart, strapping being applied in the intervals. The stump was washed with iodine water, and a drainage-tube put in. The wound was dressed with terebene and oil, and the stump put upon a posterior splint. The knee, on examination, was in an advanced state of pulpy disease. The joint was full of caseating pulpy material. The cartilage was removed from the external condyles, and the bone was covered with granulations. The opposing surface of the tibia was in a less advanced condition. The underlying bone was healthy. In places sinuses had begun to form. On the 18th, the sixth day after the operation, the stump was dressed for the first time, when union of nearly the whole length of the wound was found to have taken place. On the 14th the patient was doing well. There was very little discharge from the stump. Temperature 99·6°, pulse 100. On the 17th secretion had diminished in quantity. On the 21st, the fourteenth day after the operation, the drainage-tube was removed. Temperature 101·2°, probably due to constipation. On the 23rd there was only a granulating surface of about a quarter of an inch at the inner extremity of the wound. Union had taken place in the rest of its extent. Temperature 99°. Chest examined: Right apex much improved since his admission. Good resonance over the right apex, and fair over the left, the only fault being a slight prolongation of the respiratory murmur. Left side inspiration still clogged. Respiration still somewhat bronchial. At bases good vesicular murmur.

On July 14th the patient was discharged convalescent, and looking comparatively well. He had then no night-sweats, and did not spit blood. The stump had healed well, except at the inner extremity of the line of union of the flaps, where there was a very small granulating surface.

*Remarks.*—I have thought this case worthy of being brought before the notice of this Society on account of the important practical point it illustrates—namely, the value of removing local suppurative disease, and more particularly bone or joint disease, when associated with lung mischief; and if it cannot be said in the case before us, from the want of lapse of time to enable us to form a

positive judgment, that the organic disease which existed in the lung at the time of the amputation had disappeared, there can be no doubt that it had become quiescent, and had apparently advanced towards cure; for when the man left the hospital all the local lung symptoms had ameliorated, and his general condition had greatly improved. It is to be noticed also that the wound after the amputation had almost entirely healed by quick or primary union. If I might venture to speak from my own personal observation, I am convinced that the presence of local suppurative joint and bone disease, if it does not primarily originate lung trouble, does much to aggravate it and hasten its progress; while the case I have brought before you, in addition to the experience gained by others which have passed under my care, clearly prove that by the removal of the local suppurative disease the lung mischief, which may have been previously progressive, is retarded, if not cured; the lung disease by its presence affording an argument in favour of operative action rather than of delay. Under these circumstances, it clearly becomes the duty of the surgeon to employ his art actively rather than expectantly, and to take away by no partial but by some decided operative measure any local suppurative disease which by its progress has been proved to be incurable by natural processes, or from its nature is likely to require much time for its repair. The case I have just read adds another to the list, which has been steadily lengthening, in which this practice has proved successful, and it will, I trust, encourage surgeons to carry out the line of practice it illustrates. In lardaceous visceral disease the same line of practice should also be employed.

Mr. EDMUND OWEN said that the first point of interest in Mr. Bryant's report was that the case had been originally taken for one of rheumatic origin; he had seen several cases of acute necrosis and arthritis which had been similarly mistaken, especially in children. Looking at a patient with the complication of joint and visceral trouble, the question should present itself thus: Which is the primary disease? If the lung or liver trouble be secondary to the joint affection operative measures will simplify matters, for a patient might bear up against the one source of exhaustion when he was sinking under their combined influence. A similar state of affairs is seen in the case of a child with disease of each knee-joint. When the worst limb is amputated the other begins to mend. It was well to watch a patient closely, and if lardaceous disease and albuminuria are coming on, or if he shows other signs of going down-hill, to operate without delay. Children pick up remarkably, and the albuminuria of amyloid disease subsides after a well-timed operation.

Mr. WALTER PYE remarked that Mr. Bryant had laid it down that

one need not refuse to operate in cases of early phthisis. This was also the opinion of the late Mr. Vincent, and the teaching of Mr. Savory. By operation one substituted a clean wound for a foul suppurating surface. He quoted three cases of amputation in advanced phthisis for joint disease, which had been under Mr. Savory's care. The patients had all done well, and the manner in which the wounds took on repair was most remarkable. The night sweats ceased, the general condition was greatly ameliorated; moreover, air again entered the diseased portion of the lung. He quoted a case under his own care in which, though the wound did not heal for a long while, the boy gained flesh, and this occurred after successive amputations at the ankle and the knee. Finally, after a third amputation for disease of the other ankle, the health again improved. This child had not eventually recovered, but it was possible that the operations, which had been reluctantly performed, had added years to the child's life.

Mr. PEARCE GOULD instanced a case under Mr. Marshall's care for hip-joint disease with advanced lardaceous disease of the liver, associated with albuminuria. The child's rapid recovery after amputation was astonishing. Such operations as amputation were justifiable—like operations for fistula—in cases of early phthisis, but not in advanced lung disease. Surgical opinion on this matter had probably been influenced by the almost certainty with which wounds now healed by first intention as compared with years ago. Possibly the antiseptic method might influence the surgeon now to operate in cases in which he would some time since have refused to interfere.

Dr. GILBAERT SMITH considered the question opened up by Mr. Bryant's paper was one of great importance in the treatment of disease. It was one which should be discussed in each individual case more than as a general question, for the success of operations performed in phthisical patients largely depended upon the form of phthisis present. In out-patient practice he had seen many cases of consumption in which, notwithstanding the presence of pronounced physical signs, such as those of cavity, yet the chronicity of the disease, the absence of advanced symptoms, and the slow loss of weight would warrant him in advising operation if necessary. In cases where the symptoms were out of due proportion to the physical signs, he would be chary of recommending surgical interference, and be guided by the temperature chart and by the course of the disease, rather than by the presence or otherwise of serious physical signs.

Dr. DE HAVILLAND HALL would be influenced in considering the propriety of amputation by the localisation of the lung trouble. With diffuse lung complications the cases were apt to run a rapid and unfavorable course. In Mr. Bryant's case there was no breaking down of lung, and no moist sounds. In other words, the mischief was confined to the apex, which was solidified.

Mr. WALSHAM related two cases under his notice somewhat like Mr. Bryant's; in one the patient had lung disease associated with hip-joint disease, and in the other the association was with disease of the shoulder. It was remarkable how the temperature and general condition improved after his interference with the knife.

The PRESIDENT said it was important to decide, as Mr. Owen had remarked, which was the primary disease and which the secondary? and that a patient might, as had been suggested, bear one trouble where he could not bear two. He confessed he was surprised to hear of the improvement which the advanced lardaceous liver could undergo

after judicious operative interference. He thought that in the author's case catarrhal pneumonia was advancing to unmistakable phthisis.

Mr. BRYANT remarked on the unanimity of opinion expressed by the surgeons present; but said that there was some question as to how far disease of the lung might have advanced when amputation might be justifiable. He thought amputation might be of great therapeutic aid, even in advanced lung disease. That local suppurative disease was apt to be the starting-point of visceral trouble all seemed agreed; and he gave an interesting account of an amputation in a case of lardaceous disease which was secondary to joint disease. He thought the question, which was a great one, required more general recognition. Any surgical interference in such a case must be trenchant; excision must not be considered in comparison with amputation.

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*October 31st, 1881.*

**A CASE OF PARALYSIS OF THE SEVENTH, EIGHTH,  
AND NINTH NERVES, WITH ATROPHY OF THE  
MUSCLES SUPPLIED.**

By W. H. BROADBENT, M.D.,  
PRESIDENT.

THE patient was a woman who has twice been in St. Mary's Hospital under the care of Dr. Broadbent.

There was a distinct history of syphilis. Six months ago she suffered from severe pain in the head and soon after paralysis of the right side of the face and deafness in the right ear came on. This was followed three weeks later by difficulty in swallowing with regurgitation of fluid through the nose. Later still the tongue became affected, and when she first entered the hospital in June deviation was scarcely present. The paralysis of the tongue, however, rapidly increased and with it atrophy of the right half of the organ. The affection of the seventh above and of the ninth below, together with the paralysis of the soft palate, led to an examination of the neck, as it was inferred that the eighth must be included in the disease; the sterno-mastoid and trapezius were then found to be paralysed and atrophied.

The actual condition of the patient was as follows.

She was quite deaf in the right ear. The right half of the face was completely paralysed, the affection of the occipito frontalis and corrugator superciliæ, of the orbicularis oculi and of the muscles of the ala nasi, showing that it was the facial nerve or its nucleus which was the seat of the lesion and not the fibres connecting the nucleus with higher centres. There was no impairment of sensation. There was little to be seen on examining the fauces, and the patient now swallowed well but the voice was husky and cracked, and the patient could not say many words without taking breath ; it was obvious that air passed too freely through the larynx during vocalisation, and this was explained by complete paralysis of the right vocal cord, which was evident on laryngoscopic examination. The right sterno mastoid and trapezius were practically non-existent, so that the deep structures of the neck seemed to be immediately under the skin ; the scapula and with it the outer end of the clavicle were drawn up by the levator anguli scapulæ, so that the shoulder did not drop as much as might be expected. The right half of the tongue was paralysed and wasted.

A severe cough from which the patient suffered, attributable probably to destruction of the pneumogastric, was now gone or nearly so.

The interest of the case lies first in the extreme rarity of the combination of paralyses exhibited, no other example apparently being on record, and next in the localisation of the lesion.

The disease giving rise to paralysis with atrophy of exactly the distribution here found, cannot have its seat in the higher centres or in the tracts descending from them, it must be either in the lower end of the pons and the adjacent part of the medulla oblongata or outside the nervous axis altogether ; and there can be no doubt that the latter is the true situation. It would be impossible for disease, even if it were sclerosis, which would not lead to pressure upon or great vascular disturbance in adjacent parts, to implicate nerve nuclei or tracts over so extensive an area as to embrace the auditory, facial, glosso-pharyngeal, spinal accessory, and pneumogastric and hypoglossal nuclei, without also affecting either the motor or sensory tracts from the cord or the fibres of the cerebellum. But independently of this consideration there are others ; one is, that the entire spinal accessory nerve is paralysed, and it has its origin not only in the medulla but along the cervical cord ; a second is that there is no paralysis of the sixth nerve, and the nucleus of this nerve is so closely

associated with the facial nucleus that an intra-medullary lesion of the one invariably involves the other.

The lesion being external to the pons and medulla the question arises whether or not it is an affection of the bones, and this appears to be excluded by the distance apart of the foramina of exit. The disease, then, is almost certainly close to the surface of the medulla on its lateral aspect; and it may be supposed, both from the syphilitic history and from the fact that it has apparently been arrested, that it is syphilitic.

On January 30th, 1882, Dr. Broadbent read the post-mortem notes of the case as follows:

The case turned out to be one of syphilitic pachymeningitis of the right cerebellar fossa. When the tentorium was divided the right lobe of the cerebellum was found to be closely adherent to the dura mater. Upon this, the dura mater was stripped from the bone and removed with the parts, and on further examination the inflammation and thickening of the dura mater strangling the nerves at their exit by the foramina was seen to be the sole lesion, the medulla and pons being quite normal, as were all other parts of the brain.

Dr. HUGHLINGS JACKSON remarked that the President's case was of great interest and importance. In most of these cases there was a history of syphilitic disease. He had himself recorded two somewhat similar cases in the 'London Hospital Reports.' In both of these cases the lesions were the result of syphilis. At the post-mortem examination there was atrophy of the crico-arytenoid muscle on the affected side. But syphilis was not invariably the cause of these allied symptoms. In one case which had been under his care there had been discovered a cyst in the cerebellum, although during the life of the patient Dr. Hughlings Jackson had thought that there was little doubt of its syphilitic origin. During her last days this patient had a drawing back of the head. In another case he had diagnosed syphilis during life, but at the post-mortem examination no syphilitic lesions were discovered. In this case the symptoms had come on slowly, but the post-mortem examination revealed the presence of a glioma which had involved the medulla and pons Varolii. He referred also to certain allied cases of Duchenne's paralysis and to cases of progressive muscular atrophy in illustration of Dr. Broadbent's remarks.

## A CASE OF PROGRESSIVE PARALYSIS FOLLOWING A MILD ATTACK OF DIPHTHERIA.

By H. RADCLIFFE CROCKER, M.D.

The patient was a boy of five years of age attending at the East London Hospital for children. The paralytic symptoms began three days after the patient had been pronounced convalescent from the primary symptoms, with vomiting repeated for several days; the voice was noticed to be nasal, and when first seen by Dr. Crocker, in addition to the paralysis of the palate, the boy was noticed to be weak at the knees; a week later this had increased and the arms were weak, and when shown were quite powerless; but he could stand, though with difficulty. His respiratory muscles were beginning to be affected, his head fell forward, but there was no defect of sensation, sight, or hearing; his pulse was 130, and he could swallow fairly well.

Dr. HALL remarked that paralysis was very apt to follow mild cases of diphtheria.

Dr. DAY also narrated some cases of diphtheritic paralysis similar to that shown by Dr. Crocker. Three children in one family he had seen, and each child recovered.

Dr. BROADBENT alluded to a similar case, a lady who was suddenly attacked when sketching in the south of France. There had been diphtheria in the hotel in which she was staying, and he was inclined to think her attack was of diphtheritic origin.

## A CASE OF CARDIAC ANEURISM.

By THOMAS CHURTON, M.D. (Leeds).

DR. CHURTON recorded the case of a woman, 49 years of age, who had been lately under his care in the Leeds Infirmary. She had borne eleven children, of whom all but two died young. Two years ago she had had rheumatic fever, which was accompanied by pain in the chest, cough, and shortness of breath. These symptoms had continued, and of late her legs had begun to swell. Though well nourished she looked much older than her real age. She lay propped up in bed. Respirations 30, shallow; there was but little sputum with the cough.

The chest was somewhat barrel shaped. There was no dulness; the breathing was coarse and harsh.

Dr. Churton made, on August 25th, the following notes of the examination of the heart:—Apex in fifth space five inches from the mid-sternum. First sound feeble at apex and everywhere; second sound well marked; a slight cantering rhythm is distinctly made out to be due to reduplication of the first sound. The impulse is lifting and prolonged, notwithstanding that the feebleness of the first sound would scarcely make one expect to find it so. No bruits are clearly discoverable now. (A systolic apex bruit had previously been audible.)

On Aug. 26th the impulse had shifted to the sixth space, and it was further noted that (as was then supposed) the impulse was apical only and very different from the full roll of hypertrophy. The radial pulse rose fairly but was easily compressed.

The aneurism (specimen exhibited) occupied the anterior part of the left ventricle. The pericardial layers corresponding to its position were adherent. The diameter of the wasted portion of the muscle was about three inches, the entire heart being enlarged. The aorta was very atheromatous; the coronary arteries when slit up were also found to be highly atheromatous and gritty. The thinning of the muscle was not sharply defined. The inner surface was covered by deposited fibrin.

Dr. Churton also showed a second specimen in which there was a general thinning of the left ventricle, and at the apex the cardiac muscle was thinner than elsewhere. There was also a deposition of clot in what at first sight seemed to be a cavity formed by the thinning of the wall, and which was much more marked in the specimen when fresh. It was doubtful, however, upon closer examination, whether the condition could properly be termed aneurismal. The aorta was extremely atheromatous, though the man was but thirty-seven years of age; and even the smallest visible branches of the coronary artery were of milky hue and atheromatous (early stage). The patient died of pleurisy after two aspirations—there was blockage of one ureter and cystic kidney.

Dr. BROADBENT remarked upon the instructive nature of the case, and thought the report might help to lead to a correct diagnosis of this condition, which was a difficult problem. The second case required more careful examination than he had been able to give to it. He was hardly inclined to admit its aneurismal nature after his short inspec-

tion ; the clot was certainly ante-mortem. The first was a well-marked example of aneurism of the ventricular apex.

Dr. GREEN was inclined to regard the second case as one of ante-mortem clot, and not of aneurism.

Dr. FOWLER said he had met with similar cases to the second one—viz. dilated ventricle secondary to atheroma of the vessels.

Dr. CHURTON, in reply, thought the reduplication of the first sound due to the retarded emptying of the ventricle.

Dr. Churton then read notes of a case of quinine rash, on which Mr. Pye remarked that after an attack of ague he had himself taken twelve grains of quinine at a dose for a long period and he certainly peeled, as Dr. Churton's patient had done. He had had no rash, but the desquamation was complete, but he attributed it to his high temperature rather than to the quinine ; he did not bring forward the case, however, as a scientific communication.

Dr. ROUTH related a similar case, in which there had been desquamation, though not after scarlet fever, or after quinine. Forty years' experience had not led him to believe that quinine would produce free desquamation.

Dr. C. T. WILLIAMS asked if there had been any cinchonism previous to the peeling.

Dr. THOROWGOOD recorded a case of quinine rash in a lady.

Dr. R. CROCKER remarked upon the idiosyncrasies noted in patients taking different rash-producing drugs. The definite rash after each administration looked as if the quinine was directly responsible for the roseola.

Dr. CHURTON replied, and the meeting adjourned.

*November 7th, 1881.*

## DISEASE IN THE PONS. PARALYSIS OF THE LEFT SIXTH AND SEVENTH NERVES.

By W. H. BROADBENT, M.D.,  
PRESIDENT.

THIS case was brought forward as a companion picture to that of the patient shown to the Society at the last meeting in which there was paralysis of seventh, eighth, and ninth nerves, the lesion producing it being outside the nervous axis.

The patient, a young man, æt. 24, enjoyed good health till five years ago, when he had a fit, after which he was never quite strong, and became absolutely deaf in the right ear. In March he began to suffer much from headache and confusion, then squinting was observed, and, later, distortion of the face.

This paralysis affected the left sixth and seventh nerves. There was internal strabismus of the left eye (with very slight conjugate weakness of the right internal rectus), and the left face exhibited the form of paralysis characteristic of lesion in the facial nerve or its nucleus, though in not a very marked degree. Dr. De Watteville found on examination that the electrical reaction of degeneration was present.

The combination of paralysis of sixth and seventh nerves is of itself almost conclusive as to the existence of disease within the medulla, in or near the nucleus in the floor of the fourth ventricle common to the two. There is, moreover, other evidence of mischief here situated; the patient's gait is unsteady, as if from interference with the functional perfection of the cerebellum, and in walking he almost invariably staggers to the right, which, with slight unsteadiness of the grip of the right hand, is probably an early indication of paresis in the right limbs, which if established would give with the paralysis of the left face and left external rectus characteristic cross-paralysis. A further indication of intracranial mischief is his emotional mobility, either in the direction of laughing or crying. The optic discs are normal, or, at any rate, not swollen; they present, on the contrary, rather deep cupping. No explanation of the deafness in the right ear was suggested.

#### A CASE OF CALCULOUS PYELITIS.

By W. H. ALLCHIN, M.B., F.R.C.P., F.R.S. Edin.

A. D.—, female, æt. 16, admitted into the Westminster Hospital, under Dr. Allchin's care, on October 14th, 1881.

The only history that could be obtained was that she was in hospital some years ago suffering from "kidney disease," since which time she has ailed more or less, but with no definite symptoms. For past six weeks has been much worse.

On admission she was in a very prostrate condition, complaining

of great pain and tenderness in the right lumbar region, over which, immediately below the last rib, a distinct swelling was perceptible. Frequent and very painful scalding micturition. Urine scanty, strongly alkaline; sp. gr. 1020; albumen one third; copious deposit of mucus, phosphates, and some blood. Microscopically the deposit showed crystals of triple phosphates, numerous pus corpuscles, modified epithelial cells, and large flakes of normal vesical epithelium. Constipation. Tongue dry, coated with brown fur. Pyrexia. No signs of peritonitis. No œdema of feet. Chest healthy. Her temperature rose to 102·6° within twelve hours of admission. Patient gradually got worse till she died, five days after admission. Leeches and hot fomentations were applied. On the day after admission there was a good deal of sickness and diarrhoea, which only lasted for the day.

*Post-mortem* (sixty hours after death).—No peritonitis, and no peri-renal suppuration. Both kidneys in advanced stage of destruction, the pyramids being almost entirely represented by cysts containing grumous, viscid, purulent fluid, similar to that in bladder and to what was voided during life. Much less in left kidney than in right. Right kidney about three times normal bulk, and left kidney one third of normal. Large calculus in pelvis of right kidney. Another as large as a horse bean in left ureter, two inches below pelvis. Both ureters much distended, especially above impacted calculus. Considerable excoriation of surface of mucous membrane of bladder. Several post-peritoneal lymphatic glands close to the hilus of the right kidney were much enlarged. Uterus pushed to right and flexed forwards. Right broad ligament three quarters of an inch long; left broad ligament two inches long. Other organs healthy.

## THE ORIGIN OF VACCINE, AND ITS BEARING ON ANIMAL VACCINATION.

By CHARLES R. DRYSDALE, M.D.

DR. DRYSDALE reminded the Society that he had brought forward the question of animal vaccination for debate on two previous occasions—in November, 1875, and in 1877. The points he desired to call attention to at this time were two: (1) the origin

of vaccine, and (2) the question of the deterioration of vaccination. The question of the origin of vaccine, from having been once settled in this country, had come to be an open question once more. Historically, Dr. Edward Jenner had the theory that a disease in the horse was the origin of cow-pox, and recent experiments at Lyons in a great measure confirmed that idea of the discoverer of vaccination. The next view was that vaccine arose frequently from the infection of cows with smallpox contagion from man. There was a good deal to be still said in favour of that opinion, and Dr. Drysdale believed that it was a *vera causa*. The spontaneous origin of cow-pox on the cow was also vouched for by a great many well-authenticated facts, especially in the Beaugency case in 1866, as also by the evidence of Ceely, of Aylesbury, in 1840. There was, in the author's opinion, no legitimate room for doubt also that vaccine had been produced twice by Mr. Ceely by the variolation of cows, thirty times by Mr. Badcock, of Brighton, and once by Dr. Green, of Birmingham. Dr. Drysdale had himself no doubt about the truth of Mr. Badcock's experiments, and had, only a week before the meeting, had a long interview with that distinguished experimenter at his residence in the south of London. The Lyons Commission of 1865, presided over by M. Chauveau, had reported that vaccine and variola were quite distinct, merely on the strength of a few negative variolations of cows, which produced no vesicle at all, but only papules, which could in no way be likened to the large and well-marked vesicles produced by Ceely and Badcock. It was curious that MM. Chauveau and his colleagues should have considered that this was any disproof of the positive results of these two observers. As to their having given variola, by restoring the lymph of the papules to infants, that was not to be wondered at, as the pus of the variola was deeply inserted into punctures on the animals, and was merely transferred back again to the infants. Had the Lyons Commission operated for a longer time and on more animals than the twelve to seventeen they mentioned, they would have produced vesicles, as Badcock had done in seven and a half per cent. of his inoculations.

As to the second point, the alleged degeneration of vaccine lymph, Dr. Drysdale said that it was clear that the original induction of Edward Jenner referred solely to the twelve or thirteen observations which he had recorded, of persons who, having had cow-pox from fifty-two to two or three years previously, had been inoculated

by him with smallpox virus, and had shown themselves refractory to the contagion of variola. Jenner obviously was not warranted in inferring from this that humanised lymph would long continue to be as protective as cow-pox against variola, and he had said this in one passage of his work. Humanised lymph had succeeded admirably in its protective power possibly as long as Jenner lived, that is, as long as the year 1823, but soon after that, and until the present date, it had been over and over again alleged that the virus was weaker in its power of forming a good scar and in protective power than it was in 1800. A writer, for instance, in the '*Encyclopædia Britannica*,' cited by Dr. Cameron at Dublin, had shown that, even as late as from 1818-23, the mortality of vaccinated persons when attacked with smallpox was only one in 330, that of non-vaccinated being one in five. But in the last epidemics in London (1870-79) no less than one in ten of all vaccinated persons attacked had died, although, too, the number of insertions now-a-days was far greater than in Jenner's days. Dr. Warlomont and Dr. Henry Martin, on the other hand, claimed for animal vaccination, direct from the calf, an even better preservative power against smallpox than the early records of the century showed the Jennerian lymph to possess; and so did Mr. Badcock and Mr. Ceely with respect to their lymph. Martin, too, insisted on the absolute freedom from erysipelas in animal vaccination, and, of course, on its freedom from all suspicion of syphilis. He had told Dr. Drysdale at Ryde that he had on several occasions offered £100 reward to any one who could show him a patient vaccinated by him since 1870, in the United States of America, with animal vaccine, who had contracted smallpox, and no one had as yet claimed the reward. Martin, alleged, too, that there was no degeneration in the vesicle or in the duration of the scab in the cases vaccinated by him from 1870 to 1877, and that having often vaccinated his patients on one arm with London lymph, and on the other with animal vaccine, he had observed quite a notable inferiority in the English lymph, the scab of which fell on the fourteenth day, whilst that of the animal lymph remained on till the twenty-first to the thirtieth day. Animal vaccine, too, could be had for vaccinations and revaccinations in unlimited quantities in epidemics, whilst humanised vaccine was then a scarce article. When time enough was taken the animal lymph almost always took in vaccinations, and took in 73 per cent. of revaccinations.

For all these reasons it appeared to the author of the paper that sooner or later animal vaccine direct from the calf must supersede humanised lymph. The expense was no doubt greater, but all civilised governments should, like the Dutch, sedulously cultivate this calf lymph, and distribute it freely to the medical profession. Dr. Green had suggested that if ever there was any sign of the animal lymph deteriorating a cow could be variolated, and from the vesicle a calf should be vaccinated, and thus the stock kept up without any fear of conveying smallpox. But the evidence at present did not seem to point to the necessity of renewing stocks of animal virus. Finally, the author suggested that the Medical Society of London—Dr. Edward Jenner's former much-honoured Society—should form a committee to investigate the question of the origin of vaccine, and report upon animal vaccination to Government.

Mr. GOULDE asked Dr. Drysdale at what stage of the eruption he would take the variolous lymph for the inoculation of the heifer.

Dr. GILBART SMITH spoke in favour of the efficacy of the calf lymph. Using it fresh as he had done he had found it almost invariably produce a vesicle which possessed characteristics better pronounced than were those of ordinary lymph.

Mr. HAMES had used the calf lymph to a great extent, and was satisfied with it in practice. One point required attention, and that was the way in which it was obtained. Often it was given out in glass tubes. He explained how, in the collection of the lymph, animal juices, owing to the application of the clamp, were allowed to pass into the tubes. Lymph so obtained was apt to produce septicæmia and other troubles. It was impossible to take too great precaution in securing the purest lymph; tube-preserved lymph should, in his opinion, never be employed.

Dr. SHERFF said that, in Brooklyn, animals were maintained at the expense of the State for the supply of pure lymph. Thus the Americans were fully alive to the superiority of the animal vaccine matter. If any great constitutional trouble followed the inoculation of cow lymph, the parents of the children were satisfied, but if they followed on the use of the humanised lymph there was what would be called in Chicago "a row."

Dr. DRYSDALE replied that we must be prepared to meet all the charges of the anti-vaccinationists, and that if the vaccine lymph were employed in the place of humanised lymph, one great cause of their complaining would be removed. He agreed that glass tubes were bad for the lymph, and should never be employed. The supply of lymph should not be made a matter of commerce, but ought to be supplied, as it is in Holland and Belgium, in unlimited amount, to all vaccinators, and free of charge. The expense in England of keeping up animal vaccine establishments would be trivial, but in any case the expense should never be considered in comparison with the momentous question of a constant and pure supply of lymph and the more perfect protection of the public.

November 14th 1881.

### CONGENITAL ABSENCE OF BOTH EYEBALLS.\*

By J. C. WORDSWORTH, F.R.C.S.

CONGENITAL absence of one or both eyes is an abnormality of so rare occurrence, that I avail myself of an opportunity of exhibiting to the Society a well-marked case of deficiency of both eyes, in the person of a baby of seven weeks (a boy).

The child is the offspring of healthy parents, who have had several well-developed children, and who, so far as I can trace, have no hereditary tendency to abnormal defects; neither are there any circumstances in the history of this gestation to account for the occurrence of the arrest of development.

The child is otherwise well formed, healthy, and mature. The orbits are of fair size, and closed by normally formed lids, having, however, only very small fissures.

On separating the lids, both orbital cavities are seen to be void, and little or no trace of the eyeballs is evident.

This case is the fourth instance of the defect that has come under my own observation in the course of thirty years experience, and, so far as my memory serves, they have all been almost exactly alike in all their details.

I have, however, had but little opportunity of seeing them more than once or twice, and am therefore unable to add anything whatever to their natural history.

Amongst my professional friends of whom I have made inquiries, few have seen more than two or three such cases, and like myself have not been able to carry their investigation beyond a cursory examination of the structures in the living subjects; nor am I aware of anyone having recognised the condition in any early stage of embryonic life, so as to trace the arrest of development towards its origin. But dissections of the structures concerned have been made in several instances, and may be found recorded in literature.

These dissections have proved the *existence* of eyeballs more or less developed, and have also established the fact that this condition

\* This condition might more correctly be designated "Arrest of Development of the Eyeballs," as in all cases examined traces of eyeballs have been found.

is one of *arrest of development*, and not one of degeneration or the organ that had previously attained a certain stage of evolution, not a shrinking, in fact, but a stoppage of formation.

The characteristic structures of the eye were found generally in a more or less advanced state of development. It is therefore evident that the arrest occurs at an advanced stage in the eye's formation.

A very interesting paper on this subject appeared in the 'Archives d'Ophthalmology' for June in this year, by Dr. Hoguard. He gives a very exact description of those cases in which a careful dissection by skilful anatomists was made.

From three of them, he concludes that the arrest occurred at the commencement of the formation of the crystalline lens, and in two others, during the period when the lens becomes enclosed in the ophthalmic vesicle—*i.e.* about the fourth or fifth week of intra-uterine existence.

Dr. LEE asked if there was any account of mental disturbance during pregnancy. He pointed out that the eye of the fetal mole is well formed, but that its subsequent shrinking is due to the growth of the base of the skull obliterating the sphenoidal fissure.

Dr. ROUTH asked if the eyeball was still growing.

Dr. DOWSE thought the arrest of development to be permanent, and had lately seen a similar condition in a young horse.

Dr. BROADBENT said it would be interesting to know whether there was any corresponding arrest of cerebral convolutions, as he had found to be the case in the brain of a deaf-mute.

## CONGENITAL MALFORMATION OF THE RECTUM. LITTRÉ'S OPERATION.

By FRANCIS MASON, F.R.C.S.

MR. FRANCIS MASON showed the parts removed from a case of congenital deformity of the rectum in which he had opened the sigmoid flexure (Littré's operation). The patient was a boy aged three days, who was admitted into St. Thomas's Hospital on Oct. 5th, 1881. He was the ninth child of healthy parents, his brothers and sisters being perfectly formed. On examining the perineum there was no anal orifice, but the parts presented a somewhat conical appearance, the apex of the cone being about the situation of a normal anus. The patient did not appear to suffer in the least degree, and there was no undue

distension of the abdomen nor was there any sickness. Three hours after his admission Mr. Mason made an exploratory incision in the ano-perineal region, and, with the aid of retractors, so as to get a good view, carried the dissection to the depth of about two and a half inches in the median line, and rather backwards. Not finding the gut, he thought it prudent to wait for twenty-four hours in the hope that an accumulation of meconium might induce a bulging of the bowel. On the following day, however, the part was in *statu quo*, and therefore Mr. Mason decided to open the sigmoid flexure in the left groin. An incision about two inches in length was therefore made parallel to, and a little above, Poupart's ligament, commencing at the internal abdominal ring, and extending outwards as far as the anterior superior spinous process of the ilium. The soft tissues and muscles having been divided, the peritoneum was carefully opened and the sigmoid flexure at once recognised. This part of the bowel having been transfixated with two needles carrying threads, the gut was opened, when a large quantity of meconium of a dark yellow colour streamed out. Great care was now taken to stitch together the two adjacent peritoneal surfaces, and also to fix the gut to the skin wound so as to avoid the passage of the meconium into the peritoneal cavity. The operation was very easily accomplished and no small intestine was visible at any time during the operation. The little patient's condition was satisfactory in every respect up to the eighteenth day after the operation, when his appetite began to fail, and it was observed that two or three small pieces of meconium passed by the urethra giving rise to a suspicion that there was a communication between the bladder and rectum. This suspicion was further supported by the fact that subsequently some fluid which was believed to be urine escaped through the wound in the iliac region. The child became more and more emaciated and died of exhaustion on Nov. 3rd, exactly one month after the operation.

The post-mortem examination was made by Dr. Gulliver who has furnished the following notes :—" In the left groin, just above the anterior superior spine of the ilium, and running in a slanting direction about parallel with Poupart's ligament, is a wound about one inch long which communicates with the bowel.

" The edges of the bowel in the upper part of the sigmoid flexure are firmly united to the edge of the wound in the abdominal parietes, and no extravasation has taken place into the peritoneal cavity, which is normal. Two or three silk sutures still remain in its coats.

On further examination the remainder of the bowel is represented by a portion of bowel of about one and a half inches in length, which is for about a third of its length of normal dimensions, but then gradually tapers to a point, like a jelly bag, till it reaches the base of the bladder, when it becomes adherent. It is found to communicate with the interior of the bladder by a pin-hole aperture, through which water can be injected in a very minute stream.

"The coats of the *bladder* are much thickened, and the mucous membrane inflamed and coated with phosphatic deposit. The *urethra* is normal. The *kidneys* present points of early diffuse suppuration. The other organs show no remarkable change. In the perineum there is a wound with edges still ununited, through which an attempt was made to reach the bowel."

In conclusion, Mr. Mason remarked that the case was one of interest from various points of view, and asked the Fellows if they could give additional information as to the site to be selected for the performance of the operation in cases of congenital malformation of the rectum and anus.

Mr. EDMUND OWEN agreed that Littré's was the proper operation for these cases, and it was easy of performance. Lumbar colotomy was difficult and dangerous, owing to the long meso-colon met with in children. If any operation were done it should not be delayed, lest peritonitis have already set in. The longitudinal bands of muscular fibre were generally effaced by the distension of the gut. Determined exploration by dissection in front of the coccyx was apt to implicate the peritoneum, whether the exploration were undertaken in the primary search for the blind end of the bowel or for completing an anal orifice after the success of the artificial anus had been established. Prolapse of mucous membrane at the artificial anus was often a troublesome sequela.

Mr. GOULD related a case where the anal cul-de-sac was properly formed. Owing to the complete contraction of the colon, from plugging of the cæcum by inspissated mucus, the presenting distended small intestine was opened instead of the sigmoid flexure. In such a case obviously Amussat's operation could have afforded no relief.

Dr. ROUTH held that much of the success of an operation depended on the sex of the child, the vagina allowing of a much freer exploration of the parts than could be obtained in the male. He suggested that a plastic operation involving muscle should be undertaken to supply an external sphincter to the new-formed anus in the perineum.

Mr. WALSHAM pointed out that the bulging met with on introducing the finger into the anal cul-de-sac was generally due to a pouch of peritoneum, and not to distended rectum, and advised a preliminary exploration by a grooved needle to determine whether the rectum really presented. He agreed that Littré's operation was preferable to Amussat's.

Mr. MASON, in reply, said that there was a total absence of urgent

symptoms in his case. He thought the internal sphincter would influence a partial control, even when the external sphincter was entirely undeveloped.

## THE CUTANEOUS DISEASES OF CHILDREN.

By ROBERT J. LEE, M.D.

DR. LEE's communication on "The Cutaneous Diseases of Children," was an analysis of the cases observed during the last ten years at the hospital in Great Ormond Street.

It is found that ten per cent of all cases of disease present some form of cutaneous affection. Of these the most common were the well-known eruptions of the head, face, neck, and body, which amounted to 63 per cent., leaving 37 per cent. which were not peculiar to children.

Dr. Lee proposed to consider these 63 per cent. under the general term of dermatitis on account of the pathological condition being one of simple inflammation, varying in degree, and thus producing the various forms known as eczema, impetigo, strophulus and others.

The relation of dermatitis to vaccination, among other causes, was explained by the fact that any local sore in a child from whatever cause it comes, may be followed by inflammation of the skin in other parts, but chiefly in the head, face, and neck.

Dr. Lee proposed for consideration the question whether the local sore might not be the origin of morbid material which was absorbed and transferred to other parts much in the same way as the secondary deposits of pyæmia are produced.

Many points were discussed ; among others, the diversity of locality exhibited by herpes which was not limited to the abdomen to the same extent as in adults. The relation between syphilitic eruptions of children and the stages of the diseases in the parents was briefly pointed out.

Dr. SANSOM thought it an advantage to group the multiform skin eruptions of children under the one head of dermatitis ; and he believed their great frequency, as compared with similar affections in adults, to be due to their arising from local irritation, caused especially by the transference, by scratching, of the ova of oxyuris from the anus to all parts of the body. If this view were correct, it showed the importance of treatment directed to the bowel condition, and to cleanliness of the finger nails.

Dr. JOHN BRUNTON urged the importance of regulating the diet in

these intractable cases; for some time past he had also given liquor potassæ in milk. He thought that the oxyurides thrived on undigested food, and that their presence in these cases was as a complication, not a cause, of the dermatitis.

Mr. STARTIN held that "dermatitis" was not a definite enough term —e.g. as eczema or lichen; and that most of the skin affections of children were of internal and not of local origin.

Mr. PYE believed that eczema occurred with greater frequency on other parts than the head and neck, and that the term eczema should be employed for vesicular dermatitis.

Dr. CROCKER said to use "dermatitis" to denote these various forms of eruption would be a retrograde step. If the definite cause of an eruption were not recognised its treatment would be inefficient. Although simplification were desirable, it might go too far.

Dr. S. MACKENZIE concurred in deprecating such extreme simplification as Dr. Lee had done.

Dr. LEE replied that his classification had induced great simplicity in the treatment of the diseases under question. Most of the children from whom he had quoted were too young to use their nails, so that he could not agree with Dr. Sansom in ascribing so great an influence to oxyurides in the causation of the different forms of dermatitis. He agreed with Dr. J. Brunton as to the bad influence of improper diet, and concluded by saying that it was as natural for the physician to generalise as it was for the dermatologist to specialise.

*November 21st, 1881.*

Dr. HARE proposed, Dr. SANSOM seconded, and it was unanimously resolved, "That the Medical Society of London, joining its congratulations with those of the entire medical world, presents its best wishes to its illustrious Honorary Fellow, Professor Virchow, on his attaining the sixtieth year of his age and the twenty-fifth of his professorship."

#### A CASE OF CONGENITAL LUXATION OF BOTH KNEES WITH DOUBLE CLUB-FOOT.

By HENRY F. BAKER.

ALICE C—, aged 6 months, was brought to the out-patients' department of the Royal Orthopaedic Hospital in June last. Her

family history is interesting as her father, aunt, and two uncles were born with talipes. The case will be seen to be one of partial dislocation of both knees. On both sides the leg is bent towards the front of the thigh and the extensors of the knee are so tense and shortened that there is difficulty in straightening the legs, and it is impossible to flex them. The patella is present on both sides, although there is some difficulty in finding it owing to the superabundance of skin in front of the joints. As well as this unusual deformity of the knees, there is also in this case double congenital talipes equino-varus of a more than commonly severe nature. I may mention that this was a case of breech presentation.

Mr. NOBLE SMITH regarded the case as one of arrested development of the head of the tibia. He would not recommend active treatment now, but later on apply an apparatus with an anterior stop-joint.

#### PITYRIASIS RUBRA AND ITS ALLIES.

By STEPHEN MACKENZIE, M.D.

(*Abstract.*)

REMARKING that pityriasis rubra was one of the rarer, and certainly one of the most intractable skin diseases, the author thought a series of cases of this disease would prove of value to the Fellows of the Society and to the profession generally, as details of comparatively few cases are published.

CASE 1.—A governess, æt. 54, in whom the disease began at nine years and declined at the age of eighteen. It almost completely disappeared between eighteen and thirty, but has persisted since the latter age. No part of the surface was free from redness and flaky scales. The hair was scanty, short, and thin; and the nails thickened, discoloured, and cracked. The patient only remained under treatment a fortnight.

CASE 2.—A farrier, æt. 42 (drawing exhibited), in whom the disease began at the age of forty-one. There was universal hyperæmia, with large flaky scales. The nails of fingers and toes were rough, thickened, and discoloured, and, later, cast off. After seven months' treatment with arsenic and glycerole of lead locally the disease was cured, and there was no recurrence after two years.

CASE 3.—A dressmaker, æt. 47 (patient and drawing exhibited). Two years before coming under observation the disease began coincidently with the cessation of the menses, with numbness of the fingers. This was followed by burning, stiffness, redness, and scaliness of the fingers. After lasting in this state two years, the area extended, and the hands, arms, legs, and feet became attacked. The disease in this case especially affected the arms, forearms, and hands, legs and feet, which were very red and covered with scales. Slighter degree of the same condition involved the scalp, part of face, neck, shoulders, buttocks, and thighs. The burning in the affected parts was most acute. The nails were roughened. This patient was under treatment for two periods of five and nineteen months, and left only a little benefited. During this time she had severe neuralgia in the head and extremities, and an herpetic eruption in the course of the sacral and cutaneous nerves.

CASE 4.—A dressmaker, æt. 39. Had previously suffered from psoriasis. The present illness seemed to connect the other with pityriasis rubra. There was hyperæmia and desquamation of the whole of the surface of the body, with the exception of some parts of the face and between the scapula. The scales were branny, but on the extensor surfaces, especially about the knees, the scales were thicker and heaped up. The nails were all dry, cracked, and discoloured, and the hair came out. There was much burning of the skin everywhere. After three months' treatment the patient left free from all roughness and scaliness.

A case was also alluded to in which a patient with running eczema of the face and legs had a pityriasis rubra-like condition of the back.

After drawing attention to the characteristics of the disease, the chief being hyperæmia and desquamation, of almost universal distribution, and showing from Devergie's description, cases by Sparks and Duhring, and Case 3 of this series, that thickening and infiltration, stated by most authorities to be absent, does in some cases occur, its course and treatment were briefly described, its alliances were then discussed, and it was pointed out that its resemblance and affinities were with psoriasis and eczema, especially the former, from which it differed chiefly in the eruption being more diffused but less intense, in occurring later in life, and yielding less to arsenic. The author agreed with Tilbury Fox and Hutchinson in regarding the disease as a neurosis. Case 3 of the series was instanced as

particularly supporting this view, by the linear extension of the disease (probably in the course of nerves), the numbness, and pallor of the fingers preceding the eruption some months, and from the patient having severe neuralgic pains in the head and limbs, and numbness in the latter.

Dr. BROADBENT had known two cases in which the disease had been mistaken for scarlet fever, high temperature and albumen occurring in each case.

Dr. R. CROCKER remarked on the transitional forms of the affection, some cases beginning as simple eczema. He mentioned some cases under his care, and remarked on the tendency to marasmus and death. He had found the excretion of urea to be small, but this might be explained by confinement in bed, &c. He could not associate any neurotic condition with the disease.

Dr. B. W. RICHARDSON had seen but two instances; in one the eruption came on after great physical and mental exhaustion. In spite of its symmetry he did not think it was neurotic; his patient suffered much from cold.

Dr. MACKENZIE, in reply, adhered to the neurotic hypothesis; in answer to Dr. Crisp he said the blood had not been examined.

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*November 28th, 1881.*

DR. H. RADCLIFFE CROCKER related a case of Congenital Syphilis in which there were osseous thickenings and enlargement of the spleen.

#### ON THE NECESSITY OF ADOPTING A DIFFERENT MODE OF BURIAL IN CASES OF DEATH FROM INFECTIOUS DISEASES.

By CHARLES H. FELIX ROUTH, M.D.

THE author made first some general remarks as to the quality of the soil of burying grounds, whether clay or gravel, the complete impermeability of the first retaining poisonous substances, and the porosity of latter allowing the volatilisation and percolation of the same. Next on the different influences on communities, when the

## 32 ON BURIAL IN DEATHS FROM INFECTIOUS DISEASES.

graves were re-opened for burial or sewage, when according to Robin and Verdeuil the solvent powers of the fluids which had passed through the soil, was much increased. He noticed—

First, the effect of a ptomaines or cadaveric alkaloids on man, as shown by the experiments of Dr. B. W. Richardson, who first extracted these salts, and by Dr. Lethéby, and later by Bouchardet and Bourtmy. The evil influences of these on communities would be chiefly communicated by solutions, more rarely by volatility of the alkaloids.

Secondly, the spread of soil diseases, such as splenic fever, typhoid and intermittents, by *bacilli*, as shown by Klebs and Cruelli, and Pasteur's experiments in the same direction; showing that not only the soil, but the *miasmata* around them communicated these diseases, though the experiments were incomplete as regarded some of the infectious diseases of this type and their effect on the surrounding air. The soil infected in this manner, and the vegetation upon it, were proved to communicate the disease even twelve years after the burial of the diseased animal.

Thirdly, diseases, also infectious, were communicated by *cocco-bacteria*. The aerial miasmata were here more general, but Dr. Routh referred to the fact that as the *solid* substances in the soil or in nurturing vessels, and not the liquid portions, were the infecting agents (this solid portion being the separated bacteria), these if so retained, he thought, might be reckoned also as soil diseases. He instanced the case of a remarkable epidemic of smallpox in Quebec, which had occurred in 1854-5, and which was traced to the opening of a cemetery, in which, 214 years previously, a large number of smallpox cases had been buried, for drainage, and at a depth much below the levels employed for interments. The conveyance of bodies dead from plague from Mesopotamia to the sacred vaults of Nedjeff and Carliola, was believed also to be the common cause of its recurrence in those parts. The occasional exceptions to these noxious influences were due to acclimatization, and atmospheric changes possibly connected with more extended oxygenation.

Fourthly, Dr. Routh proceeded to speak of the modes of burial of infected bodies in this country, and showed how inadequate they were to prevent the further development of infectious diseases, and more especially in certain soils.

Fifthly, he enumerated the various modes proposed for disposing of corpses :

(a) *Cremation* to be used undoubtedly with all of the lower animals, but objectionable for human beings, because opposed to Christian prejudice, and likely to prove an incentive to crime.

(b) The *Neapolitan method* by quicklime fossæ, an excellent plan, but not likely to be adopted in England.

(c) The *wicker basket* coffin of Mr. Haden was likewise objectionable. Ten years would not destroy the bacilli which had been found twelve years after burial, nor kill the worms who nurtured in their bodies and brought the bacilli to the surface; and family graves must often be opened before the ten or twelve years had expired.

(d) The *incrustation of dead bodies* with a stony surrounding after Crutz's method was next described. The transmission of such heavy carcasses and the expense were the chief objections.

(e) *Embalming* after the Italian method was not practicable, because, although very effective, it was a secret process and very expensive.

Sixthly, burials in the coffins now used, but surrounding the dead body with charcoal. This plan appeared to Dr. Routh the most practicable. Charcoal, particularly animal charcoal, was antiseptic, a deodorizer, and a slow burner of all bodies. In it no animals of a low type could live from the absorptive power it had to absorb all gases, specially oxygen. It was likewise cheap, and everywhere obtainable. Basing his views upon the evidence adduced by Dr. B. W. Richardson in its favour, it was the plan he preferred and recommended.

Dr. RICHARDSON said that he had first obtained the cadaveric alkaloids in the acicular crystalline form from putrid peritoneal fluid. He had shown how the intensity of the virus increases by transmission; so that at last the smallest amount inoculated sufficed to produce a fatal result. Alkaloids probably play a chief part in the processes now so generally attributed to germs. In their great liability to degenerate on keeping, these crystals resembled in some respects the poison of the viper. As to burial, he had no evidence to show that our present mode did spread disease; and some years ago he was unable to learn from any of the London undertakers a single instance of infection from handling a body. He agreed that the objections to cremation seemed, at present at least, to be insuperable; but he thought Mr. Seymour Haden's plan a great advance. The Italian method of embalming consists in an injection of chloride of zinc into the arteries, followed by the use of a silicate, and varnishing the exterior. Burial in charcoal was excellent; and he now always advised this in infectious cases, the charcoal being placed in cushions.

Dr. ROGERS thought it had been fully proved that intramural burial was fraught with great danger to the living. Decomposition should be hastened as much as possible. An outbreak of cholera in Soho, and

also a fatal outbreak of scarlet fever, had followed on the disturbance of old burial-grounds; and he doubted the immunity of undertakers' men from contagion from those who had died of infectious diseases. Burial in clay soil was bad. Charcoal was ineffectual. Medical officers of health should consider what should be done with those who had died from smallpox, enteric, and typhus fevers. For himself, he would insist on a certain quantity of quicklime being placed in the coffin of every infectious subject.

Dr. CRISP did not believe the common earth-worm really destroyed the human body. In spite of imperfect burial of carcases in the time of the cattle plague the disease had not reappeared. He did not think gravediggers were ever infected.

Dr. HERON thought facts were still wanting to prove that grave-yards were really prejudicial to public health, and cited the extensive burial of bodies of those dying from enteric fever and smallpox during the siege of Paris, all around and within the city. An early outbreak of fresh disease was feared, yet the death-rate in 1872-3 from enteric fever was amongst the lowest of the previous twenty years; and the death-rate from smallpox had steadily diminished. Bacilli were not destroyed by carbolic acid or charcoal; indeed, they had been shown to flourish under the influence of carbolic acid solution. No doubt great heat was a perfect destroyer of germs; but perhaps English people were hardly yet prepared to adopt its embodiment in cremation.

Dr. ROUTH, in reply, gave two instances of infection conveyed by dead bodies, and asked why intramural burial-grounds had been closed if they were not prejudicial to health, and if all the literature on the subject, and the Acts of Parliament which dealt with it, were based on error. He did not think the earth-worm fed on the buried flesh; but it might bring up germs originating or emanating from the decomposing tissues. Freshly prepared charcoal could be obtained in unlimited quantities from Thames mud.

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*December 5th, 1881.*

#### A CASE OF HÆMORRHAGE INTO THE MESENTERY.

By T. GILBART SMITH, M.D.

DR. GILBART SMITH gave the following brief notes of a case of hæmorrhage into the mesentery:

G. B—, a carman, at. 25, was admitted into the London Hospital on August 18th, 1881. He stated that, with the exception of slight headache during the preceding fortnight, he had enjoyed excellent health. On the morning of his admission he had risen feeling as

well as usual, and his bowels acted at 6.30. Shortly after, when on his way to work, he partook of a glass of beer at a publichouse, which he at once vomited, and was immediately seized with violent abdominal pain, for which he was brought to the hospital at 8.30 a.m.

When seen in the wards soon after admission he was lying on his right side with his back bent, the thighs flexed, and the knees drawn up; the pain from which he was suffering was constant, but every five or ten minutes became very severe, and caused him to writhe and moan considerably. Although his mental condition was one of indifference to surroundings, yet he answered such questions as were put to him rationally. There was incessant vomiting, which was increased by his taking liquids or medicine, but the matters vomited were never stercoraceous. On the right side a direct inguinal hernia, which he described as of three months' duration, was observed descending into the scrotum; for this no truss had been worn. The bowel was easily returned, but this was not followed by any improvement in his symptoms. No urine or faeces were passed.

When seen by Dr. Gilbart Smith at two o'clock that afternoon his condition was one of intense collapse, accompanied by acute colic-like pain, which was referred to the neighbourhood of the cæcum. His temperature was 97.8°, and his pulse 80, feeble and compressible. On examining his chest no abnormal signs were discovered. The abdomen was tympanitic, but nowhere tender on pressure, although he resisted examination, rolling over upon his right side, which seemed to afford relief. There was cæcal gurgling and considerable rigidity of the abdominal muscles. The patient was also seen by Mr. Frederick Treves, who was opinion that no strangulated hernia existed.

Notwithstanding all treatment the collapse became more profound, and the patient died seventeen and a half hours after the first onset of the symptoms.

*Autopsy.*—On opening the abdomen a quantity of sanguineous serum escaped from the peritoneal cavity. The small intestines were of a deep purple colour, and there was a large extravasation of blood into the mesentery beneath the peritoneum, more especially into that portion connected with the lower three feet of the ileum. The peritoneal surface was everywhere shining, and presented neither a milky appearance nor signs of any inflammatory lymph.

A small hernial diverticulum of the ileum, three inches in length, was found some two feet from the cæcum, and in its neighbourhood the bowels were intensely discoloured. Extravasation of blood into the muscular coat of the bowel at the neck of the diverticulum was especially noted. The contents of the intestines were mainly liquid and blood-stained, but the colon contained formed faeces. The mucous membrane was highly congested and was studded with numerous patches of blood extravasation.

The colon, stomach, and upper part of the small intestines were also congested, but in a much less degree. A hernial sac, whose neck admitted three fingers, occupied the right inguinal canal, and extending into the scrotum was firmly adherent to the adjacent tissues. It presented no evidences of recent inflammation or of blood extravasation, and contained no gut. Although minute search was made for the cause of the remarkable condition of the abdomen none was found. No aneurism, constricting band, intussusception, or volvulus was observed. The heart and the other organs were healthy.

Dr. Gilbert Smith said that he brought the case under the notice of the Society because it appeared to him that the cause of death was involved in much obscurity, and that the after-death appearances were of rare occurrence. Notwithstanding much search and inquiry he had not been able to hear of similar cases save those about to be related by Dr. Isambard Owen. The symptoms when taken in connection with their onset so quickly following the drinking of a glass of beer raised a strong suspicion that they might be due to the action of an irritant poison, but the healthy state of the mucous membrane of the stomach negatived this view. That the condition did not directly result from the hernia was also sufficiently shown by the autopsy. The occurrence of embolism or thrombosis appeared to offer the best explanation of the lesion, but no evidence of such was found, and Dr. Gilbert Smith confessed that he was as yet ignorant of the origin of the hæmorrhage.

*Two cases of the same.* By ISAMBARD OWEN, M.D.

CASE 1.—A woman aged 57 was brought into St. George's Hospital on the night of September 18th, 1881, in a condition of collapse. She died an hour and a half later.

A post-mortem examination was made fourteen hours after death. The body was emaciated; the surface studded thickly with nodules of molluscum, varying in size from a pin's head to half an orange.

On opening the abdomen, a black mass was seen occupying the position of the liver, but extending lower down into the abdomen. It was found to be a mass of recent blood-clot, enclosed between the layers of the transverse meso-colon, and extending a little way into the great omentum. It occupied all the upper portion of the abdomen, pushing up the stomach, liver, and diaphragm. The upper border of the liver was level with the fourth intercostal space; its lower border with the sixth rib in front.

All the blood-vessels in the neighbourhood of the blood-clot were examined with very great care. The inner surface of the abdominal aorta showed some spots of atheroma, but nothing was discovered that threw any light on the source of the haemorrhage.

The alimentary canal was healthy, and contained no blood in its cavity; the liver, spleen, and kidneys were practically healthy.

The lungs were much compressed by the upward pressure of the diaphragm, and carnified in places. They were very emphysematous, and showed a few tuberculous nodules.

The heart weighed nine ounces; it was uncontracted and empty. Its walls were flabby and thin, and the fatty coating was in excess. The mitral valves were thickened at their edges, and one aortic valve slightly thickened. The thoracic aorta, like the abdominal, displayed some patches of atheroma.

CASE 2 (with preparation and microscopical section).—The preparation showed a coil of the jejunum, near its lower end, measuring about two feet in length. Its walls, from end to end, and throughout its whole circumference, were greatly thickened by extravasated blood, so that the little finger could barely be passed into the canal. The blood was of deep red colour. None appeared in the canal of the intestine, and the serous coat was intact. The blood had infiltrated the mesentery only for about half an inch from the gut. Under the microscope all the tissues of the intestinal wall were seen to be infiltrated with blood-corpuscles. The corpuscles formed a thick layer in the sub-serous tissue, they separated the longitudinal muscular fibres from each other, and occupied a wide space between them and the transverse muscles. They penetrated between the transverse fibres, infiltrated and thickened the submucous tissue, and finally, they were

packed closely in every part of the mucous membrane, which was almost wholly denuded of epithelium.

The capillaries of the intestinal wall were indistinguishable even under a high power. Around the larger vessels diapedesis had taken place to such an extent as to indicate that the extravasation was of several hours' date.

Nothing else remarkable was found in the intestinal tract. The body was extremely obese. The heart weighed eighteen ounces; its left ventricle was dilated and hypertrophied, but the muscular tissue was healthy, as also were the valves and the large vessels.

Nothing else demanding notice was found in the body.

The patient was a woman aged 43, who died on May 30th, 1881, in St. George's Hospital, with symptoms referable to the condition of the heart. She had suffered from slight cough since early life; from wheezing and increased cough, with attacks of palpitation and faintness, for about five years; from swelling of the abdomen, frequent vomiting, constipation, anorexia, thirst, and scantiness of the urine for six weeks. The legs had been swelled for three weeks. She was in the hospital during the last seven days of life. The surface was universally œdematosus, the abdomen swelled and fluctuant, the face of a venous tint, the pulse irregular and very weak. The heart's impulse was diffused, and the apex beat indefinite. A long rough murmur was heard with the first sound over the lower half of the cardiac area, and in the axilla. The patient vomited constantly, and could take very little food. The cough left her little rest. The pulse grew weaker. Diarrœa set in on the sixth day, and she died on the seventh. No abdominal pain or other symptom clearly referable to the hæmorrhage is recorded.

The post-mortem examination was made nineteen hours after death. (St. George's Hospital Museum, Prep. No 4361.)

Dr. C. T. WILLIAMS had seen a case of hæmorrhage into the transverse mesocolon in a woman who died of tuberculosis. Possibly severe attacks of vomiting would account for the hæmorrhage.

Dr. HABERSHON mentioned a case of hæmorrhage into the mesentery. A considerable amount of small intestine was congested; there was no hernia nor intussusception.

Dr. WILTSHERE said such cases were interesting in connection with pelvic hæmatocoele. Probably the escape of blood was from the venous plexuses. Embolism might be its cause, and probably no rent could be found in any vessel. The peritoneum was readily and widely detached by large effusions without rupturing, and he pointed out the distinction between intra- and sub-peritoneal effusion.

Dr. WARNEE asked if there was any history of syphilis in these cases.

Dr. GILBAET SMITH, in reply, said that there was no heart disease or any condition likely to give rise to embolism. The vomiting was not severe. There was effusion into the intestine as well as beneath the serous coat.

Dr. OWEN said there was no evidence of syphilis or of embolism in his cases. The effusion in the second case probably originated between the layers of the muscular coat. Embolism, large enough to produce these effects, would have been readily detected, and would probably have caused gangrene rather than haemorrhage.

### COLD SHOCK IN ITS ACTION ON THE BRANCHES OF THE PNEUMOGASTRIC NERVE.

By S. O. HABERSHON, M.D.

THERE can be no doubt of the fact that physical forces are continually in operation upon living organisms, but the manner in which action is produced, and the full effect of that action, may be matter for investigation. Chemical action takes place, we know full well, in the animal frame, and heat and cold continually produce changes in our system. It is to the action of cold in some of its aspects that we would direct attention, and to some special phenomena which are due to its operation. It is generally acknowledged that cold acts—1st, upon the circulation of any part to which it may be applied; 2ndly, upon the nerves of the part; and 3rdly, upon the nutrition in a direct or secondary manner, that is to say, the nutrition of the part to which the cold is directly applied; or secondarily, on account of the altered state of the nervous supply. We may sometimes almost watch these phenomena, if ice or the coldness from ethereal evaporation be made to act upon any part, the blood supply is lessened and the colour changed, and at the same time the sensibility of the part is lessened. The capillary vessels are contracted, the peripheral nerves are paralysed, and sensibility is lessened or destroyed. The vital power of the part is reduced, it is checked or entirely stopped; if after a short time the cold is removed, and the circulation is restored, or reaction takes place according to ordinary professional phraseology, then the part becomes warm and colour is regained, the contracted vessels become relaxed, and at the same time the activity of the nervous supply is more or less restored, and there may be severe burning pain, or smarting, or distress-

ing itching of the skin. These are the symptoms so often observed in chilblains; if, however, the effect is more severe, the vitality of the part is restored more imperfectly, if at all, and frostbite or sloughing is the result. The circulation of the part cannot be disturbed without the vital changes becoming affected, as shown in the altered secretion of the part. These changes may be especially seen in the action upon the capillaries of the part, as we find in conjunctivitis; there the congestion of the vessels is followed by altered secretion from the eyelids, and the sensibility of the part is altered as experienced by the sensation, as if there were dust in the eye. The effect produced by a continued draught of cold air upon the side of the face is often seen in the consequent paralysis of the seventh or facial nerve. The nerve of expression and motion rather than that of sensation being affected, although there is often a certain amount of numbness of the part.

Again, the action of cold upon the branches of the fifth nerve is often seen in ordinary catarrh; the nose receives its branches from the divisions of the fifth nerve, and exposure to cold, contracts the vessels which by reaction become distended, and the secretion at first checked becomes abundant and profuse. The fifth nerve is closely connected with the eighth, and in fact scarcely ought to be separated from it; if the branches of the fifth nerve, on the face, the nose, and the pharynx be affected by a cold chill, those of the pneumogastric nerve or the eighth pair quickly become involved, and it is to the action on this, the large pneumogastric nerve, that we would especially direct attention. In our own climate, with its great variations of temperature, and its sudden changes, the effects of cold shock on the nerves of the throat and chest, are continually seen, but some facts connected with these changes deserve our attention. This is the time of the year when they are observed, and everyday practice is fertile in instances of the disastrous and often fatal results thus produced. We may note the action upon the pulmonary branches of the pneumogastric, then upon the abdominal branches, and lastly upon the cerebral centre of the nerve.

It is not necessary to do more than to note the catarrhal state of the throat and larynx which is due to cold, the congestion of the mucous membrane, the irritability of the part, the loss of voice, the febrile excitement, and the pain with some dysphagia which ensue.

Bronchitis in its more or less acute form is due to a similar cause,

and it may be traced either to the direct action of cold on the bronchial mucous membrane, or its secondary action through the branches of the pneumogastric; the bronchial symptoms must necessarily vary according to the severity of the affection, and whether the large, the small, or the capillary bronchi be involved in the complaint. If there be undue irritability of the muscular coat of the bronchi we find that attacks of asthma more or less spasmodic in character may be produced. These conditions we pass over to advert to one which is I think often overlooked, namely, the acute congestion of the lung or the acute pneumonia due to diminished power or paralysis of the peripheral branches of the pneumogastric nerve. Are we correct in referring this condition to paralysis of the nerve, or to an inhibitory action exerted upon it? When the cerebral centres of respiration lose their power we know that the respiration is altered, diminished in frequency or irregular, and the lobes of the lungs become congested and oedematous; so also if one of the branches of the pneumogastric nerve become pressed upon by an aneurismal or other tumour or in any way destroyed, the corresponding lobe of the lung on that side becomes congested, and a low form of inflammatory action takes place. These are the conditions that we find produced by cold either when severe in its action or operating upon an enfeebled state of the system. These states are apt to be overlooked because the symptoms are not those of ordinary bronchitis, nor of pneumonia; a patient who is advanced in years takes cold, or in other words becomes chilled, the strength is suddenly prostrated, there is febrile excitement though sometimes scarcely marked, the tongue becomes dry, the pulse feeble; the mind may become disturbed and wandering; the breathing hurried, and in a marked degree shallow. If the lungs be examined, the resonance is imperfect, very little air seems to enter the lower lobes of the lungs; there may be a little crepitant, but that is often wanting, and there is no cough, no expectoration, and on that account the condition is often overlooked. The lung is found to be in a state of acute congestion and very oedematous; the patients rapidly sink, and the death may be referred to fever or to brain disease, whereas it is due to the state of the respiratory nerve, and we might almost with accuracy call it, as some have done, paralysis of the nerves of respiration. In some cases the mind is perfectly conscious, the patient free from pain or distress; there is no cough, nor headache, and the hurried breathing does not greatly disturb the patient.

Such will sometimes remark, that there is no need for anxiety and alarm, whereas it is evident that the result will in all probability be fatal; not necessarily so, for sometimes the patient may rally under the effect of stimulants such as brandy, ammonia, ether, squill, senega, &c.

Some of the cases of rapid death produced by severe cold, dense fog, exposure to wet and snow; are of this kind; and every winter witnesses many such cases both amongst the wealthy, and still more amongst the poor. The only hope of relief lies in the restoration of the respiratory power, so as to purify the blood and free the engorged lungs. Cases of this kind will suggest themselves to the mind of every practitioner, but we have known such cases regarded as fever or simple prostration, because there was no cough; the absence of cough is because the patient has no power to complete the act of coughing, and in that lies the danger of the state. They are often not regarded as pneumonia; they do not find their way into statistics of that disease; they occur in persons advanced in life, and are different in their whole clinical course from the acute inflammation of the lungs occurring in early life. Let me give two instances.

**CASE.** *Pulmonary congestion; death in a few hours.*—A lady, aged about seventy, had been in poor health for several years, and had suffered from difficulty in swallowing, from shingles, and from a feeble state of the heart. In 1877 she complained of a painful stiffness of the arms, but it was relieved by quinine and by bromide of potassium. Her nervous system was in a weakened state.

On February 11th, 1878, she complained of cough, and when I saw her, about nine in the morning of the 12th, I found her pale, pulse rapid but feeble, the respiration shallow and hurried, and very little air entering the chest. It was evident she was in great danger, but she was unaware of it, saying that she would like to go downstairs, and did not understand "why there should be a fuss;" she was free from pain and there was very little cough. The breathing became more and more feeble, and she sank the same evening soon after 8 o'clock. The state of the œsophagus and the spasmoid stricture of the duct were connected with a feeble state of the pneumogastric nerve, but in the last attack the pulmonary branches were apparently paralysed.

**CASE.** *Sudden pulmonary congestion; acute on old bronchitis.*—A lady, æt. 64, the wife of a clergyman, had suffered from repeated attacks of bronchitis. One of them was very severe three years ago, and almost led to a fatal result. She, however, regained her health, and was comparatively well during the past summer. On October 31st she took a slight cold during the severe change and foggy weather, but she thought nothing of it, and seemed better during the week. On November 6th she was not quite so well, but on the 7th became rapidly worse, and at

9 o'clock in the evening I saw her sitting up in her drawing room, but very pale, prostrate and ill. She had some pain in the abdomen, but her respiration was very short and hurried, 40 per minute, scarcely any air entered the lower lobes of the lungs; there was no cough to speak of; the pulse was 120, the temperature 103.5°; skin dry and hot. She was ordered white-wine whey, brandy with milk, linseed poultice to be applied, and saline diaphoretic medicine. Acetate of ammonia and bicarbonate of potash were given.

On the 8th she unwisely got up, and was found at midday sitting up, but still pale and ill. She felt a little better, and rather more air was entering the lower lobes of the lungs. There was a little cough, and she was able to expectorate scanty, thick tenacious mucus. The temperature was 102°, respiration 40, pulse 120, feeble.

The brandy with nourishment and white-wine whey were continued, and she was directed to remain in bed. I was greatly surprised to find her up, for so ill did I find her the previous evening that I scarcely expected she would survive the night.

Nov. 9th.—She had had a restless night, and suffered from severe pain in the abdomen with flatulent distension. Rather more air entered the lower lobes, but there were no mucous râles nor wheezing, except in the slightest degree. The expectoration was scanty, thick and tenacious, and of a greyish colour. The lips were slightly livid, and the fingers dusky. The pulse 140, the temperature 101°, the respiration 40. The bowels had not been open, so that a small dose of castor oil was given. Some chloroform and belladonna liniment was applied to the abdomen, and senega and ammonia prescribed; the brandy was continued freely. She had a good night and appeared decidedly better at nine in the morning. The bowels had acted gently. In a short time, however, the strength failed suddenly, she became insensible and died about 4 o'clock in the afternoon, either from obstruction of some of the larger bronchi by the tenacious mucus, or coagulation of blood in the pulmonary vessels and ventricle of the heart.

In this case the symptoms were very different from those of ordinary bronchitis; the lung became suddenly congested; there was pallor and loss of power, and the respiratory act was very imperfectly performed. There was no cough at first, but with slight rallying, cough came on. Like the case previously mentioned, she was at first quite unconscious as to the severity of her illness, and was in her sitting-room, and even on the following day was dressed. The flatulent distension of the abdomen was also an indication of diminished nervous power.

If the patient have more strength, and some reaction ensue, then bronchitis is developed, and the symptoms of capillary bronchitis are manifested; but although the condition is a severe one, and the dyspnoea may become urgent, it is one most likely to be relieved by sustaining the patient, and often by a stimulating plan of treatment, for the cause is to be referred to nerve exhaustion. This form of

bronchitis where the cause is general and the whole nervous power is exhausted, rapidly extends from the large bronchi to the smallest branches on both sides; and it is in the proportion that the capillary branches are involved, that it is attended with danger. The countenance soon becomes livid, the respiration hurried, the expectoration, if any, tenacious or frothy, the pulse feeble, and the strength soon fails. Small mucous râles are heard, and the right side of the heart, which is distended from the impeded action of the lungs, beats more forcibly than the left; its cavities are distended; the liver is engorged, and so are the kidneys; the urine is scanty and often albuminous, and the bowels are confined. The brain occasionally wanders, but is often clear till nearly the last.

A different class of symptoms are produced if the lungs become involved. There may be rapid prostration, the tongue in a few hours is brown and dry, the countenance is sallow or slightly livid from congestion, the breathing is hurried, the appetite is lost, the action of the liver and kidneys disturbed; there may be little or no cough, and rusty expectoration may be looked for in vain, or it may be like prune juice.

If the chest be examined, the lower lobe may be found deficient in resonance or actually dull; there may be minute crepitation or loud bronchial breathing and noise; tactile vibration is increased, the temperature raised to  $103^{\circ}$  or  $104^{\circ}$  or more; there may be no pain in the chest, and no evidence of pleurisy, but the lung has rapidly become solidified. These cases are very apt to be mistaken for fever from the rapidity of the prostration, the dry and brown tongue, and from the manner in which the chest symptoms are held in abeyance. Another peculiarity is the rapidity with which one portion of the lung after another becomes involved, it will extend from the lower to the upper lobe, then to the other lung in a very short space of time, and the physical symptoms almost hourly change. If such a case be overlooked the pulmonary obstruction will soon lead to a fatal result, and the only hope lies in a stimulating treatment, as ammonia freely, and brandy, or champagne. We should be sorry to advocate stimulants in all cases, but where the disease arises from cold shock and the system is exhausted, it is the only plan of treatment attended with benefit. We must forget the disease and treat the patient. The following case occurred many years ago, but is a remarkable instance of the sudden prostration produced by pneu-

monia, and also of the value of the plan of treatment we have advocated.

**CASE. Acute pneumonia; sudden prostration.**—Captain D—, aet. 65, seen in consultation with the late Mr. Brett, of Stoke Newington Green. On the Good Friday of 1861, March 29th, attended church, of which he was a churchwarden. The church was exceedingly cold, and he experienced a severe rigor, which he said was ague, followed by headache and febrile excitement. On the following morning he was unable to get up, and Mr. Brett found him prostrate and very ill. His illness was so sudden that he had been unable to postpone the visit of friends who were coming to dine with him and who found him very ill in bed. At 10 p.m. I saw him, and found his appearance resembling a man in the third week of enteric fever; his countenance was flushed and had an anxious and distressed expression. He complained of pains in the head, the back, and the limbs; the bowels had been acted on freely; the skin was hot, but the feet were perspiring; the respiration was hurried; there was slight cough; the respiration at the base of the left lung was less clear than on the right side, in front there was a doubtful pleuritic rub; the tongue was dry and brown; the urine was scanty, high coloured, and it contained a little albumen. Ammonia was given with the acetate of ammonia and wine freely. On the following day there were evident signs of consolidation of the left lung, and it was rapidly spreading; the expectoration was scanty and rusty in colour. The right side of the chest became involved on the 1st April, and the prostration increased. Respiration 40, pulse compressible, tongue dry and brown. On April 2nd the patient appeared to be dying, his hands were cold and clammy, the tongue brown and cracked, and the pulse very compressible. Stimulants were given freely and the patient rallied under their action. Excitement was relieved by henbane and chloric ether, and afterwards by opium. On the 7th erysipelas on the side of the face came on and again he was so prostrate that the friends thought he was dying. Brandy was given very freely and with the desired effect, for the patient rallied. The parotid gland became swollen, and on the 12th it was in a dusky and softened state, and an incision was made into it; discharge of pus also came from the ear. On the 15th he was decidedly better, and the large quantity of brandy was lessened; but on the 16th he was again extremely prostrate, and a white, diphtheritic patch was found on the throat. It was necessary to return to the free use of stimulants, and the patient slowly rallied and ultimately recovered.

He lived for several years afterwards.

This case is mentioned to illustrate the rapidity of the prostration in some cases of pneumonia, in a few hours the strength was completely gone, as if the nervous power of the lung had been almost lost, and it was only with the free use of stimulants that any rallying took place.

In another class of cases due to the same cause, cold shock affecting the pneumogastric nerve, the *abdominal* branches appear to be primarily affected, and the malady is said to be a bilious attack, or

it may be called "biliary fever." The patient, after exposure to sudden cold, becomes sallow and, it may be, is seized with vomiting; bile is rejected; the bowels may be constipated or loose; the tongue is furred, the breath often offensive; the pulse is quickened, the temperature raised, and the patient is greatly distressed; he feels ill. Careful examination of the chest reveals no morbid sign; there is neither pain, nor cough, nor distress of breathing. After twenty-four or forty-eight hours the sickness and hepatic disturbance lessens, but still the patient is sallow, he is feverish, the urine high coloured, and often it contains a little albumen; severe pain may be experienced in the side, it may be in the region of the liver without any physical signs of disease of the pleura, and the whole malady is put down to the liver; it is said to be a case of hepatitis or acute congestion of the liver; and probably the liver is congested, but that is only a small portion of the trouble. In a short time, it may be twenty-four or forty-eight hours, the examination of the chest shows that this is affected; at the lower part pleurisy, which at first affects the diaphragmatic pleura, creeps round to the costal pleura and a rub can be detected; the lung tissue becomes implicated, and consolidation of the lung rapidly advances. Many of these cases recover, if the strength of the patient does not rapidly fail, but it is most important to recognise the fact that the malady is more above than below the diaphragm, although first indicated by disturbance of abdominal viscera. The explanation is that which I have already mentioned, that cold has affected the pneumogastric nerve, but that its first action is shown on the gastric and hepatic branches of the nerve. It is well for the patient if the secondary effect on the chest is not overlooked.

The frequency of these cases must be my apology for referring to them. They often occur, and are often overlooked because for twenty-four or forty-eight hours no physical signs of chest disease are developed. It is well known that exposure to cold will greatly affect the condition of the liver, that it will produce catarrh of the bile ducts, and inflammatory congestion, but the same cause that leads to the disturbance of the liver and stomach, may also affect the pleura and the lungs. Let me record two instances which well illustrate the state I have described. These cases have been frequently observed, and Dr. Waters, in an interesting paper on pneumonia recently published, states, "Some cases of pneumonia are ushered in with severe gastric disturbance, biliary vomiting, &c.,

while in a few, the attack is preceded by a distinct attack of jaundice."

**CASE.** *Acute pleuro-pneumonia commencing with symptoms of hepatic disturbance.*—J. M.—, æt. 62, a gentleman in good general health, tall, and proportionately stout, on October 6th, 1880, took a chill, and on the following morning, after a disturbed night, was seized about nine o'clock with vomiting; his complexion was sallow, the tongue was furred, the bowels were confined; he felt poorly, and complained of pain on the outer side of the thighs; there was no pain in the abdomen, and the chest appeared quite free. The pulse was low, and he was feverish. A purgative was given and saline effervescing medicine. At 6 p.m. he appeared sallow, nervous and restless, feverish, and with more pain in the thighs, on the outer side; the respiration was quiet, pulse 100, temperature 102°. The bowels acted twice in the evening.

On October 8th the feverishness continued, but was rather less; temp. 102°, pulse 100. He complained of pain in the right side over the lower ribs, but no friction sound could be heard, although the pain was of a pleuritic catching character; the skin was hot. Acetate of ammonia was given. At 5.30 p.m. he was less feverish, but still felt very poorly; temp. 101°, pulse 120, full. The pain in the side continued, but on careful examination no friction sound was heard, but the respiratory murmur at the lower lobe of the right lung was harsh, as if becoming bronchial. I expressed the opinion that the pain was of a pleuritic character, but a relative, a surgeon, thought it was below the diaphragm rather than above. Chloroform liniment and belladonna liniment were applied.

On October 9th he was found in the morning very ill. There was a very distinct pleuritic friction sound on the right side, with evident consolidation of the lung; the respiration was 50 per minute, pulse 140, temp. 102.6°. At 2 p.m. the inflammatory mischief had rapidly increased. Sir Wm. Jenner met us in consultation, and strongly urged that the patient should not be allowed to get out of bed, on account of the feeble state of the heart, and the extreme severity of the lung affection. We had, however, scarcely left the house, when the patient, being alone for a few minutes, got out of bed, fainted on the floor, and he did not rally, but sank in about half an hour. The pain on the outer part of the thigh may have been due to irritation of the branches of the last dorsal nerve, the branches of which extend to the gluteal region.

**CASE.** *Pneumonia, preceded by great irritation of stomach and black vomit.*—J. T.—, a gentleman, æt. 77, who had been in tolerably good health, except that he suffered from dyspepsia and flatulent distension of the stomach, went out on the morning of November 2nd to look after alterations in a chapel, and was standing about on damp ground; he became chilled and experienced a severe rigor; returned home, but felt ill. Nausea came on and then vomiting, and these symptoms continued for several days, and on the 5th the vomited matters were almost black, coffee-ground substance. On the same day distress and shortness of the breath came on, with pain at first in the right, then in the left side; there was great weakness and shortness of breath. The temperature rose to 100°, the urine was free from albumen, the bowels open.

On the 9th he was slightly sallow, distressed, and prostrate; respira-

tion 40, temp.  $101^{\circ}$ , pulse 100. The abdomen was flatulent; there was no expectoration, nor cough, but there was consolidation of the lower lobe of the right lung.

Dr. Hall, of Crouch End, under whose care this patient was, kindly informs me that all his chest symptoms have subsided.

Whilst we have referred to these conditions of the pulmonary and abdominal branches of the pneumogastric nerve as due to cold shock, it is well known that cold affects in a more direct manner the respiratory centres. Gradual drowsiness and irresistible tendency to sleep, passing into profound coma, are the results of severe cold, and the lowering of the temperature of the body, and it is doubtful how this is produced; whether the brain is affected primarily or only from an imperfect supply of properly arterialised blood, the circulation of the blood is impeded, the internal organs become congested, and the venous circulation of the brain is retarded. It may be that the cerebro-spinal fluid is increased from congestion of the large plexuses of spinal veins, the blood being driven from the surface, and that there is undue pressure upon the floor of the fourth ventricle and the medulla oblongata; but this is hypothetical. The fact, however, remains that cold has this action upon the brain, and that coma is induced; we believe that the effects on the respiratory act, and the inhibitory effect on the pneumogastric branches to the heart are amongst the chief causes of the torpor of the brain.

Happily we have not to do with the extremes of cold which lead to these dire results, unless unforeseen exposure takes place; but with the almost equally disastrous effects of sudden cold shock we are too familiar. The extreme cold of the winter of 1880-81, and the dense fogs that spread over the city, led to terrible disease, which was in many cases quickly fatal. Men were struck down in a few hours, or even in the streets whilst at their daily occupation, and the fear is that every winter such cases may occur, and the true nature of the changes be overlooked. The human body cannot bear extremes of temperature without endangering health and life.

I have thus sought to bring especially before the notice of the Society cases of acute congestion or œdema of the lung which occur from cold in advanced life, and in which the prominent symptom is prostration of strength and hurried breathing, often without any cough; and secondly, instances in which the primary affection is referred to disturbance of the liver, which quickly gives place to

more serious affection of the lung, and is often from the absence of thoracic symptoms at the first referred throughout to acute disease of the liver itself.

Dr. THOROWGOOD mentioned a case in which an attack of asthma was induced by the cold shock resulting from stripping for examination of the chest; another case where a fatal attack of pulmonary congestion was brought on by exposure at an open window.

Dr. GREEN asked for an explanation of the phenomena attributed to the pneumogastric, and doubted whether bronchial catarrh and pneumonia were due to nervous influence.

Dr. BRAXTON HICKS mentioned the case of a young lady who on going into the kitchen felt a sudden cold breath go down her throat; in two hours dyspeptic symptoms set in, followed by dyspnoea and albuminuria. One day when out in the open air, after convalescence, she experienced a similar attack. Cold acts quickly upon the nervous system, and through it on internal organs.

Dr. WILLIAMS remarked on the slowness with which lung signs become developed in many cases. He asked for more information upon the effect of cold shock on the heart.

Dr. HABERSHON, in reply, said that an attack of asthma was often induced by slight causes. He did not regard hypostatic congestion as allied to the acute pulmonary oedema observed in his cases. From the frequency with which disorder of the vagus nerve influences the lungs, he inferred that it was through its agency that the conditions described were produced. This was borne out by the marked and sudden prostration of strength, associated, in his cases, with the pulmonary affection, and probably an inhibitory influence on the heart further aided in causing the prostration. In each of the cases quoted the heart was healthy.

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*December 12th and 19th, 1881, and January 16th, 1882.*

#### THE TREATMENT OF ACUTE RHEUMATISM BY SALICIN AND THE SALICYLATES.

The PRESIDENT opened the discussion with the following remarks:

GENTLEMEN,—As you are aware, the subject which will be brought before the Society this evening is the action of salicylic acid and the salicylates in acute rheumatism. It is one of the greatest importance, and we hope that benefit will result to the entire profession from the discussion upon it which may take place. The effects of the salicylates in a large proportion of cases are incontestable. The fever abates and pain subsides. Do we allow these striking effects to

influence our imagination, and to blind us to possible disadvantages? This question will be brought to the test of large and varied experience. A considerable proportion of the cases treated in the hospitals of London will be presented to the Society in statistical form. Statistics, however, may be made to prove anything. But we shall have also the interpretation put upon them by clinical observers of high reputation, undoubted ability, and great caution. As I said, the fever is subdued and the pain removed in twenty-four or forty eight hours. Still, the question must be put: "Is the duration of the disease really lessened?" and this will be shown by its influence on the length of stay in hospital. Are relapses, such as are only too common in this disease, still more common when this line of treatment is pursued? Again, are these advantages dearly purchased by some injurious effect upon the individual, such as, for instance, by the weakened action of the heart, which is one of the striking effects of the remedy? Or, supposing that a certain number of patients derive undoubted benefit, are others injured, so that the remedy is not to be recommended for general adoption? Another point on which the results will be ascertained is the influence, immediate or remote, on the disease, and the mode of administration of the drug. This is a consideration of great moment. We shall, no doubt, also learn what the bad effects are which have been observed, and whether they have in any considerable number of cases been more than temporary inconvenience or suffering. It is to be hoped, again, that we shall have some answer to the inquiry: Does salicylic acid rob acute rheumatism of its main terror—the liability to heart disease? We may, further, have opinions as to its mode of action—whether it is simply an antipyretic, as the term is, by suppressing the febrile process; whether, again, it is anti-rheumatic, acting as an antidote to the hypothetical rheumatic poison, or interfering with its generation in the system; or whether, lastly, it is by some action on the nervous system, as suggested by Dr. Latham. I will not further interpose between the meeting and Dr. Fagge.

Dr. HILTON FAGGE read a paper of which the following is a full abstract:

After thanking the President of the Society for his invitation to him to be present at the discussion, Dr. Fagge remarked that the importance of the subject extended beyond the special disease which

was immediately concerned. He believed that the immense majority of medical men admitted the claims of salicylic acid and salicin to be superior to all other drugs in the treatment of acute rheumatism; but as yet, so far as he knew, conclusive statistical evidence had not been brought forward in proof of this doctrine. Few diseases, however, would afford as good a field for the application of the numerical method. It was, therefore, much to be desired, if it were possible, that the proof should be supplied without further delay, and in a complete form. Having referred to the observations made by Lebert, and afterwards by Sir W. Gull and Dr. Sutton, in regard to the natural course of acute rheumatism when left untreated by drugs, Dr. Fagge remarked that it was impossible to limit the comparison to cases placed under treatment on the first day of illness, not only because such cases are seldom met with except in private practice, but also because they would necessarily be of far more than the average severity, since persons affected with the milder forms of the disease would often wait for a time before seeking medical advice; but if cases in which the administration of a drug was begun at varying periods in their course were to be accepted, the question arose whether the days before they came under observation should be reckoned in or not. If the medicine were effective, the fact would appear most clearly when these days were left out; but if it were inert, then to include them (as was done by Sir W. Gull and Dr. Sutton) would not vitiate the result. In striking an average from a large number of cases, no great error was likely to arise from this source. But Dr. Fagge thought that there was an insuperable objection to the employment of averages in dealing with this question. The objection lay in the fact that some cases of acute rheumatism, instead of subsiding more or less quickly, would run on for weeks or even for months. It was impossible to leave these patients without treatment for an indefinite length of time, and consequently they became, *ipso facto*, disqualified for admission into such groups of cases as those collected by Sir W. Gull and Dr. Sutton, which accordingly contained no case lasting longer than twenty-seven days. But in tabulating cases submitted to the action of any particular medicine it would of course be unfair to leave these cases out. It might, therefore, easily happen that they should swamp the other cases that might have been cut short by the medicine, and that they should prevent its usefulness from being apparent. The only legitimate mode of comparison, therefore, was

to arrange the several cases in a vertical column, according to the length of their duration while under observation. Dr. Fagge had thus arranged Sir W. Gull's and Dr. Sutton's cases (see Table I), and found that three cases only out of twenty-four subsided within five days, the rest being pretty equally distributed over the end of

TABLE I.—Sir W. GULL's and Dr. SUTTON's cases treated with mint-water.

Duration of symptoms while in hospital.	No. of cases.	Duration of symptoms before admission had been	
		On the average.	In the several cases.
Days.		Days.	Days.
1	0	—	—
2	0	—	—
3	1	21·0	21
4	1	5·0	5
5	1	Indeterminate	Indeterminate.
6	2	6·0	7. 5
7	3	6·6	3. 3. 14
8	1	5·0	5
9	1	9·0	9
10	2	6·6	8. 5
11	3	6·0	8. 5. 5
12	2	8·0	6. 10
13	1	6·0	6
14	1	14·0	14
15	0	—	—
16	2	9·0	12. 6
17	0	—	—
18	1	12·0	12
19	0	—	—
20	0	—	—
21	1	4·0	4
27	1	7·0	7
	24	—	—

the first and the whole of the second week. He had also arranged after the same plan Dr. Rees' cases treated by lemon-juice, Dr. Garrod's cases treated by bicarbonate of potass, and Dr. Davies's cases treated by blisters (see Table II); and he found that even on Dr. Garrod's plan only eighteen out of fifty-one cases subsided within five days, there being twenty-seven from the fifth to the ninth day. In comparison with these results Dr. Fagge then proceeded to point to a tabulation of 355 cases of acute rheumatism treated by salicylic acid or salicin at Guy's Hospital, from 1876 to

1880 inclusive (see Table III), being the whole experience of that institution, so far as he had been able to extract it from the clinical books. And he found that in no fewer than 180 of these cases (almost exactly fifty per cent.) the disease subsided within five days of the commencement of treatment, the fact of subsidence being determined by the complete disappearance of joint pains, and by the temperature falling to, and remaining at, the normal point. Relapses, indeed, occurred in some of these cases, and this circumstance must afterwards be taken fully into account. But with that

TABLE II.—*Cases treated by various methods.*

Duration of symptoms after commencement of treatment.	Lemon-juice. 'Guy's Hospital Reports,' vol. xii.	Dr. Rees. 'Med.-Chir. Trans.,' vol. xxxviii.	Bicarb. of Potass. Dr. Garrod. 'Med.-Chir. Trans.,' vol. xxxviii.	Free Blistering. Dr. Davies. 'London Hos- pital Reports,' vol. i.
	Number of cases.	Number of cases.	Number of cases.	Number of cases.
Days.				
1	1	0	0	0
2	0	1	0	0
3	0	3	0	0
4	1	8	0	0
5	0	6	1	0
6	1	6	2	0
7	2	7	1	0
8	0	5	2	0
9	1	9	1	0
10	2	0	0	0
11	0	2	0	0
12	0	4	0	0
13	0	0	1	0
14	1	0	0	0
Doubtful	0	0	5	0
Totals ... ...	9	51	13	

exception the results of the treatment were really far more striking than appeared in his table. Many patients, tabulated for the fifth, sixth, and the seventh day, were really within two or three days almost free from pain and quite free from fever, or had entirely lost the joint affection, while their temperature was but slightly above normal. In many instances relief was experienced after the first dose or two, and house-physicians had remarked to Dr. Fagge on the difference which was apparent in the condition of patients left without medicine for a day or two after admission, who would keep the whole ward disturbed with their cries, whereas those who

TABLE III.—*Results of treatment by salicylic acid or salicin at Guy's Hospital, 1876–1880.*

Period at which patient became free from pyrexia as well as from joint pains, reckoned from the commencement of treatment.	No. of cases.	Number of these cases in which relapse occurred.		
		1 Relapse.	2 Relapses.	Further relapses.
Days.				
1	7	2	0	0
2	41	8	1	1
3	40	11	4	0
4	42	10	3	1*
5	50	17	7	3†
6	23	4	2	0
7	21	6	1	0
8	20	9	2	0
9	13	7	3	1
10	14	3	2	1
11	14	2	1	0
12	6	2	1	0
13	5	2	0	0
14	6	0	0	0
15	4	2	0	0
16	2	1	0	0
17	2	0	0	0
18	3	1	0	0
19	0	0	0	0
20	0	0	0	0
21	2	0	0	0
22	1	0	0	0
23	3	2	1	0
24	2	0	0	0
25	1	0	0	0
26	2	0	0	0
27	0	0	0	0
28	2	1	0	0
29	3	2	0	0
30	1	0	0	0
32	1	0	0	0
35	1	0	0	0
36	1	0	0	0
37	1	0	0	0
41	1	0	0	0
49	1	1	0	0
55	1	0	0	0
60	1	0	0	0
Indeterminate	15	0	0	0
Fatal	2	0	0	0
	355	93	28	7

\* Six relapses.

† In one five relapses.

were treated at once generally soon became quiet and peaceful. Lastly, Dr. Fagge felt confident that far more striking statistical results might be obtained from the experience of a single observer, who should give salicylic acid or salicin systematically in full doses and with perseverance. As he had already mentioned, his cases included the whole experience of Guy's Hospital, embracing the practice of eight different physicians, some of whom had given salicylic acid and salicin in small doses, and had often altered the treatment after a day or two without any cause, and certainly whenever sickness or any other inconvenient effect was produced. In many instances not more than a drachm of salicylic acid or salicin was administered in the twenty-four hours; this was taken by Dr. Fagge as the limit which should qualify the case for admission into his table. As regards dose, Dr. Fagge remarked that twenty grains every two or three hours might, he thought, be taken as the dose which was usually required to produce a sufficiently decided action on this disease; but he had lately had a case which resisted twenty grains, and yielded at once to thirty. On the other hand, there could be no doubt that as little as ten grains at intervals of six hours were sometimes effectual. Relapses occurred in ninety-three of the 355 cases; in forty-eight of the 180 cases which subsided within five days of the commencement of the treatment. In this estimate he included all instances in which there was any decided pain or swelling of joints during convalescence, or any more than the most trifling rise of temperature for a night or two. Many relapses resembled primary attacks very closely. In one case a relapse lasted twenty-one days; the average duration of thirty-one relapses (some treated, some left to nature) was five or six days. There were two ways of looking at such relapses. They might sometimes be looked on as continuations of the original illness, interrupted or postponed by the drug. In four cases relapse occurred within twenty-four hours of the discontinuance of salicylic acid, and in nine other cases within a week. Now, in a case of Dr. Habershon's, the urine yielded the purple reaction with perchloride of iron characteristic of a salicylic compound for eight days after medicine had been left off. Consequently, in all these thirteen cases it might be considered that "recrudescence" had taken place. On the other hand, there were six cases in each of which a relapse occurred after an interval of from three weeks to two months. These cases could, Dr. Fagge thought, be compared only with those in which

relapse occurred where no treatment at all had been adopted ; there could be no doubt that this often happened, but in what numerical proportion of cases he believed that it was not possible at present to state. Those observers who believed salicylic acid to be a very depressing agent might, perhaps, not be unwilling to suppose that the risk of relapse was increased by its administration ; but of this he thought there was at present no evidence. The increased liability to relapse after the antipyretic treatment of enteric fever could hardly be cited as an analogous instance if the two diseases differ in their pathology as completely as is now believed. In twenty-eight of the 355 cases there was more than one relapse, in five there were three relapses, in one four, and in one six. Dr. Fagge was adopting the practice of administering salicin in twenty-grain doses three times a day throughout the whole period of convalescence, and even after solid food was allowed, in the hope that in this way he might prevent the occurrence of relapses. Up to the present time the results of this plan had been favorable. That in many cases the administration of salicylic acid was attended with inconvenience, and that it sometimes gives rise to alarming symptoms was well known. But Dr. Fagge was inclined to think that both the frequency and the gravity of some of them had been overstated by some observers. Nausea and vomiting had, in his experience, very seldom been sufficiently severe to make a change of treatment necessary. In a few instances it had been noticed at Guy's Hospital that the pulse, besides being weak, became irregular and intermittent; in one case it fell, after nine days, to fifty-two beats per minute; in two the first sound of the heart became inaudible, and the heart's impulse could no longer be felt. The employment of stimulants had very seldom been deemed necessary. Dr. Fagge was unable to follow Dr. Greenhow's statement that in his patients who were treated with salicylic acid "more or less weakening of the pulse, requiring the free administration of brandy, occurred in nearly every case." Of the severe cerebral symptoms which are sometimes produced by salicylic acid Dr. Fagge remarked that he believed that they always subsided in a few hours, or in a day or two after the discontinuance of the remedy. What would happen if the patient was made to go on taking it he did not know. He was not prepared to deny that even salicin, and, still more, salicylic acid, leaves the patients exhausted and feeble, so that they slowly regain health and strength, and he quite believed that their stay in the hospital is now

little, if at all, shorter than before these drugs were employed. But it must be remembered that they are kept far longer than formerly on low diet, and confined to bed after the subsidence of the disease, for fear of relapse. These precautionary measures must necessarily greatly tend to protract the period of convalescence. In consequence of the very great difference between the estimate which Dr. Fagge had formed from his tabulation of cases and that put forth by Dr. Greenhow last year in a communication made to the Clinical Society, Dr. Fagge had taken the liberty of arranging Dr. Greenhow's cases in such a form as to enable them to be compared with his own (see Table IV). The results did not appear to him to be at all unsatisfactory. No fewer than thirty-six of the sixty cases subsided within five days. Of the remainder twelve could only be set down as "of indefinite duration." But in regard to most of them it might, he thought, be doubted whether the value of the medicine was fully tested, on the ground that either too small a dose was given or that the persistence of the pyrexia was due to the presence of pericarditis. Dr. Greenhow himself, however, dealt with his cases in a very different manner. Before beginning his observations he had laid down the rule that "no patient should be put on the treatment until he had been from twenty-four to thirty-six hours in the wards, and then only when it seemed clear that his illness was running an acute course." His object in giving these instructions was to exclude such cases as would, "independently of any medicine, improve rapidly after admission into hospital and become convalescent in three or four days." His plan, however, was not always quite strictly carried out, and the consequence was that he dismissed as valueless no fewer than twelve of the cases in which the subsidence of symptoms under treatment was most rapid. But Dr. Fagge urged that really the very question at issue was whether salicylic acid is, or is not, capable of shortening the duration of the attack. He certainly knew of no evidence that so large a proportion of cases as this (in addition to an indefinite number of other cases withdrawn from treatment on the ground of their mildness) would ever get well in from one to four days without treatment. The figures given by Sir William Gull and Dr. Sutton (see Table I) failed altogether to support such an opinion. He therefore thought that Dr. Greenhow did really obtain good results with salicylic acid and salicin, but that in his anxiety to weigh strictly the therapeutical claims of these drugs he dealt them

scant justice. That the severity of his sixty cases was much above the average seemed to be shown by the fact that in about twenty-five of them pericarditis was discovered, either on admission or a day or two afterwards.

TABLE IV.—Dr. GREENHOW'S cases treated by salicylic acid or by salicin. (*'Clinical Society's Transactions,' 1880.*)

Period at which the patient became free from pyrexia, as well as from joint pains, reckoned from commencement of treatment.	Number of cases.	Number of these cases in which relapses occurred.
Days.		
1	5	2†
2	11	3§
3	14	6
4	5	3¶
5	1	1**
6	1	1
7	1	0
8	2	0
9	0	0
10	0	0
11	0	0
12	1	0
13	0	1
14	1	0
15	0	0
16	0	0
17	0	0
18	2	1
19	0	0
20	1	0
21	0	0
22	1	0
Of indefinite duration*	12	3
Affording no evidence as value of treatment† }	2	0
Totals ... ...	60	21

\* These were cases 1, 2, 4, 5, 6, 7, 9, 17, 29, 31, 38, and 40 of the salicylic, and the last case of the salicin series.

† These were cases 26 and 32.

‡ In one, two relapses; in one, three relapses.

§ In one, two relapses.

|| In one, two relapses; in two, four relapses.

¶ In one, two relapses.

\*\* Two relapses.

The last two questions to be discussed were as regards the possible action of salicylic acid and salicin in preventing the development of the cardiac complications of acute rheumatism, and in warding off the risk of dangerous or fatal hyperpyrexia. As regards the heart one could not but remember that for each new method of treatment introduced within the last two years, even for the treatment by local blistering, one claim invariably made had been that it lessened the liability to inflammation of that organ. On the other hand, Sir W. Gull and Dr. Sutton showed that in cases in which the heart was healthy at the time of the patient's admission into hospital it seldom became subsequently attacked. Still, it was only fair to expect that any remedy which possesses the power of arresting acute rheumatism, so that fresh joints no longer become affected, must also hinder the development of what is believed to be an analogous morbid process in and around the heart. And although in sixty-nine of the 355 cases auscultation revealed some change in the character of the heart's sounds while the patient was in the hospital, Dr. Fagge could hardly find one in which there was reason to believe that pericarditis set in at a time when the action of the remedy was fully established. Almost all of them were cases in which at one period or another a systolic murmur was detected; and he believed that considerable doubt often hangs about the interpretation of such sounds. On the other hand, he fully admitted that salicylic acid seems to have no power of controlling or arresting the cardiac complications of acute rheumatism when once they have developed themselves. As to hyperpyrexia, Dr. Fagge thought that the evidence, so far as it went, was favorable to the drug. It would seem, however, that the risk of this and other dangerous complications of acute rheumatism has been far greater in some years than others. Between 1855 and 1867 only ten fatal cases of acute rheumatism in all occurred at Guy's Hospital. Between 1868 and 1880 there were forty-seven cases, no fewer than thirty-six of which were in the years 1870-1877 inclusive. At that time Dr. Fagge formed an impression that the frequency of fatal hyperpyrexia was not altogether unconnected with the fact that quinine and the tincture of perchloride of iron—medicines which tend to check sweating—were very commonly administered to patients affected with acute rheumatism, and that it was the practice to wrap up the swollen joints in masses of cotton-wool. The tincture of iron was being given to two of the patients whose cases are recorded

*Showing the Cases forming Sections I-IV classified into Subsections*

		SERIES A.				
		Cases in which the highest recorded Temperatures attain or pass 102°.				
		a. With marked redness and swelling.	b. Without.	c. TOTAL.	With m and	
T. I.—Subsect. 1. <small>s treated by salicylate ods or ammonia, in initial is equivalent to 3III or e in the 24 hours.</small>		<b>7</b> CASES, Of 2-19, av. 8½ days' previous duration.	<b>9</b> CASES, Of 3-19, av. 7 days' previous duration.	<b>16</b> CASES.	<small>of previous</small>	
Subsection 2. <small>the same, in conjunction with full doses of alkali.</small>		<b>13</b> CASES, Of 0-21, av. 9 days' previous duration.	<b>16</b> CASES, One of 6 wks., the rest of 1-14, av. 6½ days' previous duration.	<b>29</b> CASES.	<small>of previous</small>	
3. <small>Total of 1 and 2.</small>		<b>20</b> CASES.	<b>25</b> CASES.	<b>45</b> CASES.	<small>of</small>	
T. II.—Subsect. 4. <small>salicylate, in initial doses equivalent to 3II in the 24 hrs.</small>		<b>1</b> CASE, of 2 days' previous duration.	<b>5</b> CASES, Of 4-14, av. 7 days' previous duration.	<b>6</b> CASES.		
Subsect. 5. <small>the same, in conjunction with alkali.</small>		<b>6</b> CASES, Of 3-25, av. 13 days' previous duration.	<b>7</b> CASES, One of 36 days, the rest of 2-5, av. 3 days' previous duration.	<b>13</b> CASES.	<small>of av. previous</small>	

by Dr. Wilson Fox as having been treated by cold baths. There could, of course, be no question that the profuse sweating which accompanies this disease, whether useful or injurious to the patient in other respects, must greatly tend to keep down the pyrexia. Now, in rheumatic hyperpyrexia the rule is that the skin becomes dry as the temperature rises, though to this rule there are some exceptions. It might, therefore, be important not to administer to rheumatic patients any medicine which, besides having antipyretic properties, also checks the function of the sweat-glands, lest the former action chancing to fail, the latter should increase the patient's risk. But no such objection would apply to salicylic acid, which rather causes sweating than tends to diminish it. As a matter of fact, hyperpyrexia occurred in two of the 355 cases included in Dr. Fagge's series, but one patient had taken the medicine (in twenty-grain doses) for only twenty-four hours, when the temperature reached 106·4°; and of the other patient it is not positively stated in the clinical report that he was taking the medicine at all when, five days after admission, the complication occurred. What would really show that salicylic acid is sometimes incapable of preventing the occurrence of hyperpyrexia would be that after the temperature had begun to fall under the administration of the remedy its course should change, and that it should rapidly rise to a dangerous height. Recognising that the efficient dose of salicylic acid varies in different cases, and, therefore, that there may not improbably be some cases in which no dose that can be given is large enough to affect the disease, Dr. Fagge was quite prepared to believe that it may sometimes happen that the temperature remains high and rises to a fatal point in spite of the administration of the remedy. On the other hand, he could not refrain from remarking that Dr. Greenhow was hardly justified in speaking of two of his cases as having presented hyperpyrexia while under treatment by salicylic acid, for in one of them the patient had been taking only fifteen grains of the salicylate of soda at intervals of six hours, and even this was discontinued the night before the temperature began to rise to an alarming height. In the other case the thermometer indicated 105·8° at a time when twenty-grain doses of the salicylate were being taken; but the progress upwards was by no means rapid, and no cerebral symptoms were manifested; it was, therefore, quite possible that a fall might afterwards have taken place if the treatment had not been interrupted. In conclusion, Dr. Fagge remarked that his

*Showing the Cases forming Sections I-IV classified in*

SERIES A.				
		Cases in which the highest recorded Temperatures attain or pass 102°.		
		a. With marked redness and swelling.	b. Without.	c. TOTAL.
SECT. I.—Subsect. 1.  Cases treated by salicylate of soda or ammonia, in initial doses equivalent to 3fl. or more in the 24 hours.		7 CASES, Of 2—19, av. 8½ days' previous duration.	9 CASES, Of 3—19, av. 7 days' previous duration.	16 CASES.
Subsection 2.  By the same, in conjunction with full doses of alkali.		13 CASES, Of 0—21, av. 9 days' previous duration.	16 CASES, One of 6 wks., the rest of 1—14, av. 6½ days' previous duration.	29 CASES.
3.  Total of 1 and 2.		20 CASES.	25 CASES.	45 CASES.
SECT. II.—Subsect. 4.  By salicylate, in initial doses equivalent to 3fl. in the 24 hours.		1 CASE, of 2 days' previous duration.	5 CASES, Of 4—14, av. 7 days' previous duration.	6 CASES.
Subsect. 5.  By the same, in conjunction with alkali.		6 CASES. Of 3—25, av. 13 days' previous duration.	7 CASES, One of 36 days, the rest of 2—5, av. 3 days' previous duration.	13 CASES.



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TABLE VII.

nic Rheumatism, Pyrexial Attacks. (See page 17.)

Cases in which chronic rheumatism appeared in convalescence.	Aggregate of days of pain.	Cases in which pyrexial attacks occurred in convalescence.	Aggregate of days of pyrexia.	Average duration (in days) of suffering incurred through chronic pain and pyrexia in each section and subsection.	
2	41	4	28	2	$7\frac{1}{3}$
1	17	3	23	1	$5\frac{1}{2}$
2	58	7	51	$1\frac{1}{3}$	<b>6</b>
				$\frac{1}{3}$	$6\frac{1}{2}$
				$\frac{1}{4}$	$5\frac{1}{2}$
					<b>6</b>
1	2	1	5	$\frac{1}{4}$	<b>7</b>
				$1\frac{2}{3}$	$10\frac{1}{3}$

TABLE VIII.

SUMMARY.  
Showing the average number of days of *actual suffering*, from the commencement of treatment till discharge, for the cases in each Sub-section and Section. (See page 18.)



hearers would, of course, see that he was a decided advocate for the administration of salicylic acid and salicin, and that, before he had made the investigations, of which the results were before them, he was strongly biased in favour of these medicines. He could, however, honestly declare that this opinion had been forced upon him by his clinical experience, and that if his figures had now suggested a doubt to his mind he would have candidly and frankly admitted it. Indeed, when he first made trial of the drugs he was altogether sceptical as to their value; and even after a few patients had rapidly recovered he remembered cautioning his clinical clerks not to attach much importance to this, for he had sometimes seen the administration of other medicines followed by results that had appeared equally striking. But when case after case occurred with scarcely a failure, he became satisfied that he had a most potent remedy in his hands. All further experience had strengthened this conviction in his mind, and he would now feel that he was accepting a very grave responsibility if he were to withhold a drug which he believed to be so useful from any patient placed under his care, unless there were some good reason for doing so.

Dr. ISAMBARD OWEN exhibited the accompanying statistical tables, and read the following paper in explanation.

THESE statistical tables are drawn up from the records of 210 cases of acute and subacute rheumatism, observed by me in St. George's Hospital, during the years 1877 and 1878.

The cases are not selected. All are included that occurred in the hospital during the years named, with the following exceptions:

32 admitted in the two months of September during my absence from the Hospital.

4 of which, for unavoidable reasons, the records are incomplete.

4 of special character ('St. George's Hospital Reports,' vol. ix, p. 231).

2 complicated, the one with delirium tremens, the other with pneumonia.

1 in convalescence on admission.

---

43 in all.

The 210 cases correspond to 202 patients; seven having been admitted twice during the two years, and one thrice.

All cases of articular rheumatism, not distinctly "chronic" in character, are included. The artificial distinction between "acute" and "subacute" cases has not been made, but the cases have been classified according to the range of temperature observed, and according to the presence or absence of marked redness and swelling about the joints.

The cases were all recorded by me, as Medical Registrar, under the following conditions: each patient was seen as soon as possible after admission; and if any change had already taken place in the symptoms, reference was made to the resident officer. A daily visit was paid by me until the termination of the primary attack, and for a few days after; the symptoms and the details of condition being noted on each occasion. Every precaution was used to ensure uniformity of observation and accuracy of result.

The subsequent progress of the case was recorded, under my directions, by the Registrar's Assistants--senior students selected periodically by examination, and working under the Registrar's supervision.

The temperatures were taken, morning and evening, by the head nurses of the wards.

The 210 cases I have divided into six sections, according to the mode of treatment employed in the primary attack, as follows:

Section I.—85 cases, in which the primary attack was treated by salicylate of soda or ammonia, commencing with doses that amounted to 3 drms. or more\* in the twenty-four hours, which were reduced when the required effect was produced, or toxic symptoms appeared.

In 49 cases of section I, full doses of alkali† were given with the salicylate.

Section II.—52 cases, in which the primary attack was treated by salicylate, commencing with doses that amounted to 2 drms.\* in the twenty-four hours, which were reduced as occasion required.

In 38 cases of section II, full doses of alkali† were given with the salicylate.

\* Or the corresponding amount in the case of children.

† *I.e.* potassa bicarbonas, or potassæ citras, in sufficient amount to render the urine alkaline.

**Section III.**—19 cases, in which the primary attack was treated by salicylate in doses not exceeding  $1\frac{1}{2}$  *drm.*\* in the twenty-four hours.

In all cases but four of section III, full doses of alkali† were combined with the salicylate.

**Section IV.**—29 cases, in which the primary attack was treated by full doses of alkali,† alone, or in combination with quinine.

**Section V.**—6 cases, in which the primary attack was treated by iodide of potassium, alone, or in combination with alkali,† guaiacum, bark, or sarsaparilla.

**Section VI.**—19 cases, in which the treatment originally adopted was changed for another before the termination of the primary attack.

The varieties of treatment described above do not, except that by iodide of potassium, correspond to any differences in the character of the cases, but to the varying practice of different physicians, or of the same physician at different periods of time.

The purpose of these tables is to compare the results obtained in the first four of these sections and in their sub-sections. We must then ascertain the bearing of the cases in Section VI upon the comparison.

TABLE I, or INDEX TABLE.—AVERAGE PREVIOUS DURATION.

Table I is an index to the rest. It shows the cases included in the above four sections and their sub-sections, classified into four series, according to the range of temperature observed, as follows:

**Series A.**—Cases in which the highest recorded temperatures attain or pass  $102^{\circ}$  F.

**Series B.**—Cases in which they range from  $101^{\circ}$  to  $101.9^{\circ}$  F.

**Series C.**—Cases in which they range from  $100^{\circ}$  to  $100.9^{\circ}$  F.

**Series D.**—Cases in which they do not attain  $100^{\circ}$  F.

Each series is further divided into two sub-series; cases with marked redness and swelling about the joints, and cases without.

For convenience of reference to the 119 groups thus formed, the lines corresponding to the sub-sections and sections are numbered

\* Or the corresponding amount in the case of children.

† *I.e.* potassæ bicarbonas or potassæ citras, in sufficient amount to render the urine alkaline.

consecutively from 1 to 10; the columns corresponding to the series and sub-series lettered from *a* to *l*.

The average duration of the cases in each group, prior to the commencement of treatment, is given in the index table; and the extremes appended also.

Duration is in all cases reckoned from the onset of definite local symptoms of rheumatism, prodromata being neglected.

From the averages are excluded a few exceptional cases, of more than four weeks' previous duration. The term of these is set down separately.

The averages, in the smaller groups, vary from 8 to 15½ days. The averages of the complete sub-sections are, however, closely approximate; and an uniform basis of comparison is thus ensured for, at any rate, the largest groups in the succeeding tables.

**TABLES II, III (and V).—DURATION OF THE PRIMARY ATTACK  
UNDER TREATMENT.**

Tables II and III, preserving the same method of classification as Table I, show, for each group, the results of treatment as regards the primary attack, viz. the average duration of pain, and that of pyrexia,\* after the commencement of treatment.

The former is reckoned until the day when the patient, strictly questioned, declared himself perfectly free from pain; except in a few cases where slight pain, legitimately describable as of "chronic rheumatic" character, persisted after the cessation of the acute symptoms. (See Table VI.)

The latter is reckoned until the day when the chart shows the temperature fallen to 98·6° F., not again to rise above 99° before the complete cessation of pain. Temporary abatement of temperature, without cessation of pain, is not counted as absence of pyrexia.

In these two tables we notice the following points:

1. *The duration of the primary attack appears to be independent, both of the character of the cases (as far as defined in the classification) and of their previous duration.*
2. *It does not appear that the duration of the primary*

\* The cases forming Series D are omitted from Table III for obvious reasons. From Group 1 *b*, is omitted a case in which pericarditis supervened; from 4 *c*, one in which the temperature record is incomplete.

*attack was affected by the amount of the initial doses of salicylate, within the limits given; or by the combination of full doses of alkali with the drug.*

*3. The primary attack, after the commencement of treatment, was on the average only about half as long under salicylate as under full doses of alkali.*

The duration in many of the cases included in the first three sections was prolonged by the supervention of toxic symptoms, which interfered with the regularity of administration. Table V shows the number of cases in which this occurred, and their incidence in particular sub-sections.

#### CONVALESCENCE.—TABLE IV.

How soon did the patients under these several methods of treatment recover sufficiently to be allowed to leave the hospital?

This is shown in Table IV, which preserves the same mode of classification as the three preceding, and gives the average (and extremes) of residence in hospital, after the commencement of treatment, for each group.\*

This table would appear to show that, *as compared with the alkaline treatment,*

1. *The advantage gained, in shortening the primary attack, by the use of salicylate alone, was not sustained by the shortening of the whole period of illness, at any rate when large initial doses of the salicylate had been given;*
2. *That advantage was sustained, to some extent, when the alkaline treatment had been combined with that by salicylate; and most markedly when the salicylate had been given only in restricted doses, equivalent to about 2 drms. in the twenty-four hours.*

#### RELAPSES, ETC.—TABLES VI AND VII.

Next:—What precisely is signified in each section by the duration of cases after the termination of the primary attack; merely a state of convalescence, more or less prolonged, or active suffering?

This is shown, as far as concerns the cases under consideration, by Tables VI and VII.

\* From Group 2 & is excluded one case in which varicella supervened, and from 4 & one which was complicated with pneumonia.

In these two tables the division into series is omitted ; as also is the sub-division of Section III.

Table VI shows the number of cases in each section and sub-section in which relapses occurred, and the percentage of such cases on the whole section or sub-section ; also, the aggregate number of relapses (some cases relapsing more than once), their aggregate duration in each section and sub-section, and the average duration of a relapse ; finally, the average number of days of suffering incurred through relapses by the cases forming each section and sub-section.

1. It appears that the liability to relapse is practically identical in Sections I, II, and IV, but that the average duration of a relapse is twice as great, or more, in the two former sections as in the last.\* The proportion of *relapses* to *relapsed cases* is rather higher in Section IV than in the other two, but still practically the same.
2. Both the percentage of relapses, and their average duration, are higher in Section III than in the others. No multiple relapses, however, occur in this section.
3. It does not appear that the combination of alkaline with salicylate treatment had any more effect in preventing relapses than the salicylate treatment alone.†

Table VII shows :

1. The number of cases in each sub-section in which chronic rheumatism persisted after the cessation of the primary acute attack.
2. The number of cases in which chronic rheumatism appeared during convalescence.
3. The number of cases in which fever re-appeared, without any recurrence of pain.‡

\* No uniform rule appears in the treatment of the relapses. Sometimes the original treatment was resorted to ; sometimes a different plan ; and sometimes the original treatment was resumed after apparent failure of the fresh plan. The average duration of relapses, after the resumption of salicylate treatment, taking all forms of it together, is  $2\frac{1}{2}$  days.

† In the large majority of cases included in this statistic, the administration of salicylate was suspended soon after the cessation of pyrexia and pain. This investigation, therefore, throws no light on the question, whether continuance of the drug in convalescence tends to obviate relapse.

‡ It is noticeable that these attacks occurred only in cases treated by salicylate, and, with one exception, in those treated with large initial doses. As a causal

4. The aggregate number of days occupied, in each section or sub-section, by these several occurrences, and the average number of days of suffering thereby incurred in each section and sub-section.\*

**TOTAL OF SUFFERING UNDER EACH FORM OF TREATMENT.—**

TABLE VIII.

Adding now the aggregates of Table VII and those of Table VI, to the corresponding aggregates which furnished the final column (*t*) of Table II, and calculating the averages, we arrive at the following results. (Table VIII.)

*Average number of days of suffering, from the commencement of treatment to the date of discharge.*

Section I.	1	7½ }
	2	5½ }
	3	— 6
Section II.	4	6½ }
	5	5½ }
	6	— 6
Section III.	9	— 7
Section IV.	10	— 10½

It appears, then, that in respect of actual suffering, as regards the cases under consideration,

1. *All the modes of salicylate treatment show a marked advantage when compared with the results of alkaline treatment.*
2. *The advantage was least marked where the salicylate was given in large initial doses, without alkali, and hardly more so where the salicylate was given only in small doses.*
3. *The advantage was more marked for the salicylate in moderate initial doses, and most marked of all where salicylate was given, either in large or moderate initial doses, combined*

connection with the salicylate may be thus indicated, they must, in fairness, be taken into account, as in the table, and not considered as accidental complications.

\* Besides the above, the following complications presumably prolonged the duration of eight cases included in Table IV.

Pleurisy, affecting 1 case in Sub-section 1.				
Pericarditis	"	1	"	1.
"	"	3 cases in	"	2.
"	"	2	"	10.
Pleurisy	"	1 case in	"	10.

*with full doses of alkali. In the two latter cases, the total duration of suffering averages hardly more than half that shown in the cases treated by alkali alone.*

#### SUMMARY.

Comparing Table VIII with Tables II, III, and IV, we arrive at the following, as the result of the whole investigation.

That these cases tend to show—

1. *That, as compared with the alkaline treatment, the use of salicylate not only shortens the duration of the primary attack, both pain and fever, but materially lessens the total of suffering.*
2. *That the salicylates, by themselves, do not materially lessen the duration of the cases, but that they do so to some extent when their use is combined with that of full doses of alkali.*
3. *That while the use of salicylate, in initial doses equivalent to 3 drms. or more in the twenty-four hours, has a slight advantage over its use in smaller doses as regards the primary attack, this advantage is lost by the prolongation of convalescence, and, possibly, by the liability to pyrexial attacks in convalescence.*
4. *That of the modes of treatment dealt with in the above statistics, that which combines the greatest aggregate of advantages is the combination of alkaline and salicylate treatment, the salicylate being given in doses equivalent at the outset to 2 drms. in the twenty-four hours, and reduced as occasion requires.*

#### MODIFYING EFFECT OF QUININE.

In three cases, under salicylate treatment, quinine was given also. From the following details its influence would appear to have been *nil*.

	Case 1, of Group 1A.	Case 2, of Group 1B.	Case 3, of Group 4B.
Previous duration	...	5	19
Duration of pain under treatment	2	6	2
Duration of pyrexia under treatment...	4	3	6 (recent endocarditis)
Residence in hospital after treatment...	11	51	20
Salicisms	...	Tinns, Vom.	
Relapses	...	2	
Duration of ditto	...	22 days.	

(‘St. George’s Hosp. Rep.,’ vol. ix, p. 223.)

## SECTION VI.

The six cases treated by iodide of potassium, forming Section v, have no bearing on the present investigation. They will be found briefly detailed in 'St. George's Hosp. Reports,' vol. ix, p. 225.

The nineteen cases, Section vi, in which the original mode of treatment was changed for another before the termination of the primary attack, are similarly detailed in the same volume, pp. 225—228.

We find—

- A. One case which proved intractable under any form of treatment. The administration of salicylate in this case was much interfered with by the production of toxic symptoms.
- B. Six cases in which salicylate was superseded in consequence of toxic symptoms.
- C. Five cases in which salicylate was superseded for apparent failure.
- D. Three cases in which salicylate was superseded without obvious cause.
- E. In three cases, alkali was superseded by salicylate.
- F. In the remaining case, nearly convalescent on admission, but relapsing subsequently, bark was substituted for alkali and quinine before pain had ceased. The treatment of the relapse appears to show considerable benefit from single doses (3ss) of salicylate, taken at night.

On analysing these cases, we find—

1. In three no treatment appears to have been of avail.
2. Six appear to have done ill under the substituted alkaline treatment (combined with iodide of potassium in two), though they had previously been doing well under salicylate. In three of the six a return to salicylate appeared attended with marked benefit.
3. Two did well under the substituted alkali and iodide, but they had been doing well also under the salicylate, which was superseded on account of toxic effects.
4. In one, rapid recovery followed substitution of alkali and quinine, but the superseded salicylate had been given for only twenty-four hours, and it is, therefore, impossible to say to which treatment, if either, recovery was due.
5. In one, iodide appears to have been of benefit after the total

failure of salicylate. Salicylate had, however, been given only in small doses.

6. In two, no marked benefit appears to have resulted from salicylate. No other mode of treatment had been fairly tried before salicylate was substituted.

It may be urged that these two cases should be included in the Tables under Sub-sections 5 and 1 respectively, the commencement of treatment being reckoned in the one case from the substitution of salicylate; in the other, from its augmentation. If this be done, only a minute fraction will be added by the one to the averages of lines 5 and 6, in Tables II, III, VII, and VIII, and a still smaller fraction subtracted from those in Table IV.

The other will add to the average of Sub-section 1 about  $\frac{1}{2}$  day in Tables II, III, IV; and  $\frac{3}{4}$  day in Table VII. The average in Table VIII will therefore be raised to  $8\frac{1}{2}$ . The corresponding averages of Section 1 (line 3) will be increased by less than half these amounts.

In view of the combination of the salicylate with iodide of potassium and bicarbonate of soda, in this case, it is at least open to question whether it should fairly be so included.

7. Three cases have no bearing on the question.

We have, then, as the result of an analysis of Section VI—

- a. A possible modification introduced into the Tables, to the disadvantage of the treatment by large doses of salicylate, uncombined with potash.
- b. A case giving to iodide an advantage over salicylate in small doses.
- c. Six "neutral" cases, from which no conclusion can be drawn to the advantage of any system of treatment.
- d. Six cases, giving an apparent advantage to the treatment by salicylate.

Nothing in these results calls for any modification in the conclusions arrived at from examination of the Tables: unless it be to reassess the advantage claimed for treatment by salicylate in large doses.

#### CARDIAC COMPLICATIONS.

The information which these cases afford with regard to the influence of the salicylates on cardiac complications is slight.

Pericardial friction appeared after admission in six cases, viz. :

- a. In two cases under treatment by alkali with quinine. In both these cases endocardial murmurs were previously present.
- $\beta$ . In three cases under salicylate with alkali. In two of these the heart-sounds had been abnormal from admission, and in the third case pain about the waist had been a prominent symptom from an early period.
- $\gamma$ . In one, under full doses of salicylate of ammonia, without alkali. No symptom or sign suggestive of heart-affection had been present at the commencement of treatment.

Permanent endocardial murmurs appeared after admission in five cases,

One of Sub-section I. (Table I.)

Two        "        2.        "

One        "        8.        "

One of Section VI, under treatment by alkali.

Temporary endocardial murmurs in three.

One of Sub-section I. (Table I.)

Two        "        2.        "

Besides the above, pericardial friction was present on admission in one case, and endocardial murmurs in ninety-one.

In twenty-five of the latter the murmurs disappeared before discharge.

#### ALBUMINURIA.

The urine of every patient was examined for albumen daily, if possible, during the primary attack, and at intervals afterwards.

It was exceptionally only, that specimens could be obtained for examination before the commencement of treatment.

In no case did symptoms of acute nephritis appear after admission.

Suppression of urine occurred in two cases, for two days at a time in each; one of the cases was of Section I; the other, of Section VI, was under treatment by alkali and quinine at the time.

Albuminuria, persisting till discharge, was observed in eight cases.

Four of these fall in Section I.

One in a patient, the subject of scarlatinal nephritis.

In one, a trace only of albumen persisted.

In two, much albumen.

One falls in Section II.

In this case, the albumen was detected before treatment was commenced.

One falls in Section III.

A trace of albumen only persisted.

Two fall in Section V.

A trace only persisted in one.

A more marked albuminuria in the other.

In none of these cases, except that of Section II, was a specimen of the urine procured before treatment was commenced. In all cases the albumen was detected on the first examination.

These cases lend therefore no support to the view that permanent damage is done to the kidneys by salicylate.

Does salicylate favour a transitory congestion of the kidneys? It will suffice to compare the observations in Section I, cases under large doses of salicylate, with those in Section IV, cases not treated by the drug.

Excluding instances of permanent albuminuria (see above) and cases in which no examination of the urine was practicable, we find—

In Section I,

Temporary albuminuria, during the continuance of the primary attack, in

63 cases out of 80; i.e. 78·7 per cent.

In Section IV, in

12 cases out of 24; i.e. 50 per cent.

Or, excluding mere traces,

In Section I, in

42 cases out of 80; i.e. 52·5 per cent.

In Section IV, in

7 cases out of 24; i.e. 29·2 per cent.

Support is therefore lent to the belief, that the salicylates favour transitory congestion of the kidneys during the continuance of the febrile state.

By "the salicylates" the salts prepared from carbolic acid, which alone were used, are meant.

#### TOXIC EFFECTS OF SALICYLATE.

The rarer toxic effects noticed were:

In one case,—deafness and mental excitement, not precisely delirious;

in one,—with the delirium, tremor, and a papular rash ;  
in one,—nausea, with a pustular rash ;  
in one,—giddiness, with vomiting ;  
in one,—shivering, with headache and tinnitus ;  
in one,—delirium tremens,\* followed by a papular rash, that  
became pustular. The patient was a milkwoman of alco-  
holic habits.

No case of *hyperpyrexia* occurred.

Dr. DONALD W. C. HOOD communicated the statistics of 1200 cases treated in Guy's Hospital, as follows :

GENTLEMEN.—I bring before you this evening a few statistics which I have procured in connection with the treatment of acute rheumatism. Some four months ago, in consequence of a conversation which I had had with Sir William Gull, who, with Dr. Sutton, is working at the subject of the rheumatic state, I began to collect the cases which furnish the matter for my tables. I had already put together nearly 500 cases when Dr. Fagge spoke to me of the meeting to be held at the Medical Society, and suggested that it would probably be interesting to the Society if I placed before you a series on the same system of analysis as that followed by himself—the cases to be without salicylate treatment. This I have done ; the results, such as they are, I have much pleasure in laying before you this evening. My figures deal with about 1200 cases treated at Guy's Hospital by different physicians. They relate exclusively to acute sthenic rheumatism, occurring in patients under thirty-five years of age. I think the members of the Society will concur with me in thinking this reservation an important one, the clinical history of acute rheumatism becoming more varied and complex after this period of life. The cases are taken consecutively from the clinical records preserved at the hospital. I have arranged my figures and facts under the following tables. First, a table in which 350 cases are placed in a form parallel to that brought before the Society on the evening of Monday, December 9th, and published in the 'Lancet' of the same week ; Dr. Fagge's cases being those under the salicylate treatment, whereas mine have been treated by

\* Another instance of delirium tremens, occurring apparently as a toxic effect of salicylate in an alcoholic subject, under treatment for erysipelas, is alluded to in 'St. George's Hosp. Reports,' vol. ix, p. 17.

various remedies not salicylate. This table shows the day upon which patients lost their pain and fever, reckoned from the commencement of treatment. It has appended, the average duration of the illness before admission, and also the average time patients remained in hospital. For convenience of comparison, especially with regard to the length of stay in hospital—which point Dr. Fagge's table does not touch upon—I have taken from my own series 350 cases in which the salicylates were used, and I have treated these cases upon the same basis of arrangement, thus giving the day upon which pain left and the temperature became normal; and, further, as in my first table, giving a column which points out the average duration of the illness.

These cases, it must be remembered, are drawn from the same source as those of Dr. Fagge's, with this exception: Dr. Fagge made some slight selection with regard to the amount of drug used. My cases come consecutively from the records, and I have made no selection whatever. I think it right to call attention to this point, as under the circumstances it is natural that Dr. Fagge's table should give a somewhat different result from mine. I must ask you to refer to Dr. Fagge's table as a basis for comparison, my own salicylate table being simply complementary to his, and I think, as you will see, fully bearing out his statements.

In connection with the above I have drawn up another table, in which, instead of averaging the duration of illness after admission, I have classified the discharges from hospital as follows,—the number of patients presented for discharge under ten, twenty, thirty, and forty days' respectively, a fifth column giving the number of patients remaining in hospital longer than forty days. This table in a large degree obviates the difficulty which we must experience in taking averages as our test for the length of illness. Here no long period in hospital of an individual patient can interfere with the general result. The one table may be looked upon as more than supplemental to the other; it gives us a stand-point from which we can test the accuracy and estimate the value of our averages.

Seven hundred cases I have again taken; half have been treated by salicylates, half without. I have divided them into series corresponding to the interval which elapsed between the commencement of illness and the admission of the patient into hospital. This table, you will see, embraces under its various heads a distinction between

those patients who were suffering from any complications, and further gives the average date of loss of pain and of the duration of the illness.

A critical examination of these tables points out clearly and decidedly that patients taking salicylate lose their pain more quickly than those who do not take this remedy. Out of Dr. Fagge's cases, of 350, 288 lost their pain within the first nine days of treatment; in my own series of 350 cases treated in a similar manner, 247 patients lost their pain in the same period of time;

TABLE I.—350 Cases treated with salicylates.

Day on which pain ceased and temperature became normal.	Number of cases.	Relapses.	Average duration of illness.
1	13	3	36
2	32	6	34
3	46	7	32
4	40	6	36
5	37	9	35
6	19	7	40
7	22	7	38
8	13	0	42
9	15	3	35
10	14	1	42
11	7	4	45
12	7	1	44
13	3	0	84
14	4	0	34
15	3	0	32
16	4	1	31
17	6	2	39
18	7	0	52
19	6	1	50
20	4	0	39
21	1	0	28
22	1	0	54
23	5	2	57
24	4	2	60
25	5	1	57
26	2	1	51
27	1	1	92
28	2	1	64
29	0	0	0
30	1	0	42
31	2	0	48
32	5	0	64
33	0	0	0
34	2	0	71
Longer	5	0	64

whereas of 350 cases treated without salicylates, only 141 lost pain within the nine days. Is the effect stable? Apparently not, for on looking at the tables we shall see that the relapses among patients taking the remedy are vastly increased; and on further examining the average duration of stay in hospital, we find that patients taking this drug remain perceptibly longer under treatment. A scrutiny of my figures closely corroborates Dr. Fagge's statements that patients soon lose their pains, but are left feeble and exhausted after the use of this remedy.

TABLE I a.—350 Cases treated without salicylates.

Day on which pain ceased and temperature became normal.	Number of cases.	Relapses.	Average duration of illness.
1	2	0	31
2	7	0	20
3	11	2	24
4	17	5	27
5	20	0	31
6	19	1	32
7	24	0	36
8	20	0	26
9	21	3	39
10	18	1	33
11	12	0	45
12	16	0	31
13	17	0	29
14	11	2	42
15	7	0	34
16	10	1	42
17	10	0	37
18	7	0	40
19	6	0	32
20	7	1	48
21	9	0	38
22	4	0	39
23	8	0	38
24	4	0	44
25	5	0	49
26	8	0	43
27	2	0	43
28	2	0	44
29	5	1	58
30	5	0	56
31	1	0	37
32	2	1	51
33	3	0	86
34	2	0	46
Longer	31	1	64

TABLE II.—700 Cases divided into Series according to the Length of Illness before Treatment. This table shows the average duration of time in hospital, and average days upon which pain ceased. Half the cases were treated by salicylates, half without.

*Patients ill seven days or less before admission.*

Duration of illness.	Cessation of pain.
With salicylates, 37 days .....	6th day ..... 55 cases.
Without salicylates, 34 days .....	13th day ..... 56 cases.

*With complications.*

With salicylates, 42 days .....	9th day ..... 110 cases.
Without salicylates, 40 days .....	15th day ..... 100 cases.

*Patients ill more than seven days and less than fifteen before admission.*

With salicylates, 36 days .....	9th day ..... 33 cases.
Without salicylates, 39 days .....	16th day ..... 30 cases.

*With complications.*

With salicylates, 41 days .....	9th day ..... 71 cases.
Without salicylates, 44 days .....	12th day ..... 70 cases.

*Patients ill more than fourteen days and less than twenty-two before admission.*

With salicylates, 44 days .....	11th day ..... 12 cases.
Without salicylates, 43 days .....	12th day ..... 12 cases.

*With complications.*

With salicylates, 35 days .....	8th day ..... 17 cases.
Without salicylates, 43 days .....	16th day ..... 18 cases.

*Patients ill more than twenty-one days and less than twenty-nine before admission.*

With salicylates, 32 days .....	4th day ..... 8 cases.
Without salicylates, 43 days .....	12th day ..... 4 cases.

*With complications.*

With salicylates, 42 days .....	14th day ..... 11 cases.
Without salicylates, 40 days .....	9th day ..... 12 cases.

*Patients ill more than twenty-eight days before admission.*

With salicylates, 40 days .....	7th day ..... 12 cases.
Without salicylates, 23 days .....	12th day ..... 6 cases.

*With complications.*

With salicylates, 46 days .....	8th day ..... 20 cases.
Without salicylates, 39 days .....	12th day ..... 22 cases.

TABLE III.—*Showing in 1200 Cases the Number of Patients Discharged under 10, 20, 30, 40 days; 350 with Salicylates, 850 without.*

*350 Cases with Salicylates.*

Days.

Under 10	20	30	40	Ill longer.
3 .....	31 .....	76 .....	84 .....	160

*850 Cases without Salicylates.*

Days.

Under 10	20	30	40	Ill longer.
12 .....	105 .....	175 .....	182 .....	331

TABLE IV.—*Showing the Number of Cases suffering from Heart Complications in 1200 Cases.*

*350 Cases with Salicylates.*

Subjects of primary rheumatism.	Subjects of previous rheumatism.	Total.
148 .....	93 .....	241

*350 Cases without Salicylates.*

Subjects of primary rheumatism.	Subjects of previous rheumatism.	Total.
141 .....	86 .....	227

*Second Series.—500 Cases without Salicylates.*

Subjects of primary rheumatism.	Subjects of previous rheumatism.	Total.
154 .....	119 .....	273

Endeavouring to estimate the effect of salicylate treatment upon cardiac complication I have divided my 1200 cases into three series again—350 without, 350 with salicylates, and the remaining 500 without. The construction of this table gave me no little difficulty, for, as Dr. Fagge justly observed, "Much obscurity attaches itself to the interpretation of the cardiac murmurs heard during the course of acute rheumatism." However, I have felt bound to enter all those cases in which the heart was noted as being affected at some period or other during the time the patient was under treatment. Do not understand by this that I have included cases in which the sounds were mentioned as being rough, prolonged, or the like, but those cases only in which a definite bruit existed. The presence of such bruit would in most cases be endorsed by the

opinion of the physician in charge. We find that among the 350 patients treated by the salicylates 241 suffered from heart affection of some kind or other; among the 350 treated without salicylates 227 suffered from this complication; of the 500 without salicylates 273 were affected. The proportion between the two classes is much the same, but what little advantage there is does not appear to lie on the side of the salicylate treatment. With respect to the treatment of acute rheumatism, this complication of heart affection appears to me one of the most important points for consideration. Acute rheumatism is an expression the sum of which comprises certain known factors—to wit, pain, fever, often dangerously high, and a liability to mischief of heart. There are, doubtless, other points which, for the moment, lie without the scope of our present inquiry. But weigh these several factors one with the other; the preponderance of one is wellnigh overwhelming. Any remedy vaunted as a specific in acute rheumatism must show in marked degree its efficacy in controlling—I would rather say in preventing—heart disease. On this one count alone salicylic acid must be prepared to stand its trial, and must further submit to the most severe cross-examination at the hands of the profession.

I have placed before you dry detail, but still facts, which may contribute in forming the skeleton of an inquiry the importance of which cannot be over-estimated.

Dr. J. KINGSTON FOWLER said :

Comparing my experience at King's College Hospital in 1876 with that at Addenbrooke's Hospital in 1878-79, I have been struck by the comparative absence of severe toxic symptoms at the latter, where the pure acid made from the oil of winter-green is exclusively used. In thirty-nine cases treated with pure salicylic acid toxic symptoms were present in ten only. In five there was deafness, in two deafness and tinnitus, in three deafness, tinnitus, and vomiting. In two of these cases the vomiting was probably not due to the effects of the drug. Twenty grains of salicylic acid were usually prescribed, at first every two hours, and subsequently every four or six hours as the symptoms abated. The average stay in hospital of these cases was about thirty-one days. As regards the relief from pain, subsidence of fever, and liability to relapse, the pure acid does not appear to act with greater benefit than the ordinary acid.

The advantages claimed for the pure acid are that it rarely produces vomiting and never delirium; so that the treatment can be continued without the necessity of temporarily suspending the administration of the drug. The price of the pure acid varies from 5s. to 3s. per oz.; Kolbe's acid costs about 7d. per oz. At my suggestion Mr. G. S. Johnson, Demonstrator of Chemistry at King's College, Loudon, has examined specimens of Kolbe's salicylic acid. The analysis is not yet complete, but shows the presence of a considerable quantity of a substance not precipitated by nitrate of silver, and therefore not salicylic acid. This is not an isomeride of salicylic acid; nor is it carbolic acid. The investigation is of importance, as it may lead to improvements in the process of manufacture and the elimination of the substances causing the toxic symptoms. I think facts give but little support to the view that Dr. MacLagan has put forward, that the disease has a miasmatic origin, and that the relapses are characteristic of its type. It would be interesting to have statistics of the proportion of cases which relapse occurring in private practice. I suspect that the low temperature of wards and the prevalence of draughts have much to do with the frequency with which they occur among cases treated in hospitals. Wards maintained at a uniform temperature, and supplied with heated air, are much required for the treatment of cases of acute rheumatism and chest affections in general hospitals.

Dr. FRANCIS WARNER read the following paper:

Salicylic acid appears useful in lessening the duration of pyrexia. In 190 cases in which salicylic acid was employed the average duration of pyrexia was 5·5 days. In 79 cases without salicin the average was 13·8 days.

Salicylic acid appears to lessen the duration of joint pain. In 277 cases in which salicin was used the average duration of pain was 5·3 days. In 67 cases without salicin the average was 9·3 days.

Salicin lessens the average of days of confinement to bed. In 342 cases treated with salicin the average was 19·5 days. In 211 cases without salicin the average was 23·5 days.

Salicin lessens the average number of days in hospital. In 352 cases in which salicin was used the average stay in hospital was 34·9 days. In 387 cases without salicin the average was 36·2 days.

It appears, then, that salicin lessens the duration of the pyrexia

TABLE I.—*Cases Treated with Salicylate of Soda.*

	1876.		1877.		1878.	
	No. of cases.	Days.	No. of cases.	Days.	No. of cases.	Days.
Average duration of pyrexia after commencement of treatment :—In 190 cases 5·5 days. In 1878, duration from commencement of illness, 18·5 days.	76	8·3	65*	3·8	49*	3·6
Average duration of joint pain after commencement of treatment :—In 277 cases, 5·3 days.	74	5·8	113	5·3	90	5·0
Average number of days in bed :—In 342 cases, 19·5 days.	84	20·5	161	18·7	97	20·1
Average stay in hospital :—In 352 cases, 34·9 days.	81	36·1	161	33·9	110	35·5
Heart disease developed in 48 cases out of 352 cases. —i.e. in 13·6 per cent.	81	18	20·6	161	15	9·3
Relapses occurred in 120 cases out of 357 patients. —i.e. in 33·6 per cent.	84	27	32·9	163	57	35·0
Relapses: Period of occurrence after commencement of treatment :—Average, 15·2 days.	—	—	—	—	15·5 days	14·7 days
Average duration of relapses, 3·5 days.	—	—	—	—	—	—

\* In all these cases the temperature was 102° F. or over.

TABLE II.—*Cases Treated without Salicylate of Soda.*

	1875.	1876.	1877.	1878.
	No. of cases. Days.	No. of cases. Days.	No. of cases. Days.	No. of cases. Days.
Average duration of pyrexia after commencement of treatment :— In 79 cases, 13·8 days . . . .	—	64 15·8	9* 7·5	6·8
Average duration of joint pain after commencement of treatment :—In 67 cases, 9·3 days . . . .	—	26 14·0	21 7·0	6·7
Average number of days in bed : —In 241 cases, 23·5 days . . . .	107 24·0	71 25·6	38 21·4	18·7
Average stay in hospital :—In 387 cases, 38·2 days . . . .	253 36·0	71 41·8	38 30·7	2·5 31·2
Heart disease developed in 38 cases out of 267—i.e. 14·2 per cent. . . . .	133 17 12·7	71 14 20·4	38 4 10·5	2·5 3 12·0
Relapse occurred in 20 cases out of 134—i.e. 14·9 per cent. . . . .	— 71 8 11·1	38 7 18·4	25 5 20·0	

\* In all these cases the temperature was over 103° F.

and joint pain. Under the treatment by salicin the patient was able to get up sooner, and was kept in hospital a shorter time, than in cases otherwise treated.

The question then arises, Does salicin cure rheumatism? does it remove the rheumatic condition? We may take as proof of the presence of the rheumatic tendency the liability to the development of heart disease and the liability to relapses. In the salicin cases heart disease developed in 13·6 per cent.; in cases treated otherwise, in 14·9 per cent. Relapses occurred in 33·6 per cent. of the salicin cases, on the average at the 15<sup>2</sup>nd day, lasting on the average 3·5 days—*i. e.* the rheumatic condition lasted till the 18·7<sup>th</sup> day, although fever and pain subsided much sooner under the treatment.

**Dr. DE HAVILLAND HALL** read the following paper.

My statistics are based upon 55 cases of acute rheumatism admitted into the Westminster Hospital during the year 1880, including 3 remaining over from 1879.\* In one of these 55 cases, the notes of the treatment are so scanty that I have been obliged to discard it; with this exception my statistics refer to all the cases of acute rheumatism admitted within the period I have mentioned. Of the 54 cases, 38 were treated by the salicylate of soda at some period of their course, the remaining 16 without it.

	Salicylate treatment.	Without salicylate.
Days in hospital .....	(nearly) 34	... 33
Days of fever† .....	7	... 9
or excluding Case 45.....	—	... 6½
Days of pain .....	7½	... 12
or excluding Case 45.....	—	... 10

Of the salicylate cases, in the one (No. 5) longest in hospital (ninety-one days), the duration of stay was due to phlebitis, which followed the rheumatism. The shortest stay was twelve days.

Of the cases not treated by salicylate, sixty-eight days (No. 42) was the longest period in the hospital. This case was complicated by acute pneumonia in a heavy drinker. The shortest stay was six days. There was only one fatal case among the 55 (No. 44). This was the case of a woman, aged eighteen, who died with pneumonia,

\* For these statistics I am indebted to Dr. Gristock, the Medical Registrar.

† By days of fever are meant days in which the temperature was above 99° F.

endo- and peri-carditis, with extensive myocarditis. She had the salicylate for a short time. In 33 of the salicylic cases the temperature charts show that in 19 the temperature was above 102°, and in 3 below 101°. In 15 non-salicylic cases, 3 above 102°, and 4 below 101°.

There were cardiac complications in 29 of the cases; in 19 they occurred while the patient was in the hospital—in 14 of the salicylic cases, and in 5 of the non-salicylic cases. In 3 of the salicylic cases there was temporary albuminuria. In the non-salicylic cases albuminuria occurred twice, in one case temporarily; in the other there was the history of scarlet fever. In one case there was hyperpyrexia, the temperature reaching 108·7°. At first the temperature fell from 103·5 to 100·6 under the influence of twenty-grain doses of the salicylate of soda given every three hours. On the third day in hospital the medicine was given every four hours; the temperature rose in the evening to 108·4°, and next day continued rising rapidly till it reached 108·7, the patient becoming delirious. The patient was bathed twice, and made a rapid recovery.

In 8 cases the salicylate produced symptoms of poisoning (salicinism):

1 (No. 26). The patient had taken ten grains every hour for twelve hours. There were delirium, restlessness, hallucinations, wild look (like delirium tremens, but no alcoholic history), and deafness. In last attack stated to have had hallucinations, but milder than the present. Heart sounds very weak. Pulse 112 on admission; 98 when delirious; 60 after the seventh day.

2 (No. 33). Deafness, rambling delirium (like alcoholism); twitchings during excitement. Twenty grains every three hours.

3 (No. 34). Deafness, giddiness, and vomiting. Patient stated that he was unable to take salicin in last attack. Twenty grains every three hours.

4 (No. 36). Deafness.

5 (No. 49). Mild salicylate poisoning with deafness and delirium, but marked relief of pain and fever. Twenty grains every three hours; on the second day every six hours.

6 (No. 50). Slight buzzing in the ears and deafness.

7 (No. 55). Slight deafness. Fifteen grains every four hours.

8 (No. 56). Deafness and temporary delusions.

Salicylate of soda was the drug always employed; and in nearly every case, if the symptoms were at all acute, the patient was

ordered it on admission. The drug was given in doses of from ten to twenty grains, the usual treatment being fifteen or twenty grains every three or four hours. As the pain diminished and the temperature fell, the frequency of the dose was lessened to every six hours or three times a day. In some cases twenty grains were given every two hours till the pain abated; then an interval of no medicine and a recourse to salicylates if the pains returned. This plan did not seem to answer, as relapses were more frequent than when the drug was gradually discontinued. The relapses, however, nearly always yielded at once to the salicylate.

In contrasting the cases—38 in number—treated by the salicylate of soda, it will be noted that their average stay in hospital was less than a day in excess of the average stay of the 16 cases treated without the salicylate, and that in comparing the days of fever and pain the advantage is still more distinctly in favour of the salicylate plan.

In comparing the heart complications which occurred nineteen times under observation, the proportion between the two sets of cases is practically the same; this speaks highly in favour of the salicylate plan of treatment, when the much more acute nature of cases subjected to this plan of treatment is borne in mind; but it is only what we should expect from the power the salicylate has of reducing the duration of the fever and of the pain.

As regards other complications, there was no evidence to show that the salicylate exerted any injurious influence. Temporary albuminuria occurred three times, but only once in combination with salicinism, so that in all probability this was merely accidental. In none of the eight cases of salicinism was there any permanent effect left.

The following are some quotations from notes of the cases:

**CASE 11.**—Much easier by second day in the hospital, though a little pain persisted till the seventh day.

**CASE 41.**—Rapid relief under salicylate.

**CASE 54.**—Pain severe and badly borne. Highest temperature on the sixth day (in hospital), when salicylate given with immediate relief and fall of temperature.

**CASE 40.**—Relapse of pain and fever (temperature 102·6°) on the eleventh day (not having taken salicylate). Almost immediate relief under salicylate. Temperature next day 98·8°, and day after normal.

CASE 25.—Slight relapse (while taking bicarbonate of potash) with rapid recovery (treated by salicylate of soda).

Dr. COUPLAND read a paper as follows :

My contribution to this subject consists in an analysis of eighty-four cases of acute and subacute rheumatism treated with more or less rigour by salicylate of soda. Statistics from the Middlesex Hospital bearing on this subject have been published by Dr. Finlay and Mr. Lucas in 1879,\* and by Dr. Greenhow in 1880.† I decided to limit my survey to the cases which have occurred in my own wards during the two years I have been physician, in the hope that a closer scrutiny might thus be possible than if one were dealing with a larger body of cases, and thus something more than a statistical inquiry be attempted. I may remark, however, that the number of cases exceeds that analysed by Dr. Greenhow, and as they came from the same hospital the two series may well be compared. But I have not, like Dr. Greenhow, excluded the mild cases; and with nine exceptions‡ the administration of the salicylate was commenced upon the day of admission. In a few cases it was entirely abandoned from intolerance on the patient's part or apparent inefficacy on the part of the drug.

I should also state that the doses which were administered were by no means heroic, the endeavour being to give as small an amount as possible consistent with the production of relief from pain and fever, for it had seemed that large and frequently repeated doses, rapidly efficacious though they are, have to be soon abandoned owing to the inconvenient, if not serious, toxic effects they produce. Only once, then, has as much as 160 gr. in the twenty-four hours been given (or 20 gr. every three hours) not often 120 gr., more frequently 90 gr. (or 15 gr. every four hours), and 60 gr. (or 15 gr. every six hours). Dr. MacLagan has remarked that the rapid elimination of the drug requires its frequent renewal and administration in large doses; but although I have several notes of the rapid appearance of the salicyl reaction in the urine, as tested by the perchloride of iron, I have also notes where the reaction has been obtained two or three days after discontinu-

\* 'The Lancet,' 1879, vol. ii, p. 420.

† 'Clin. Soc. Trans.,' xiii, p. 262.

‡ In 2 on the second day, in 4 on the fourth, and in 1 case each on the seventh ninth, and tenth days respectively.

ance of the drug ; and Dr. Fagge quoted a case of Dr. Habershon's in the same sense. Moreover, the toxic effects are seldom produced after the first dose, but after two or three doses have allowed the drug to act with cumulative effect. I should argue, then, that the drug continues to exert an effect for some time after its administration has been discontinued. The point, however, is one which will be raised again in speaking of relapses. I may simply add now that throughout, the principle has been recognised to prevent relapse, if possible, by continuing the administration long after the subsidence of the primary fever and articular manifestations ; and frequently the dose has been gradually reduced in the hope that the patient may be kept to a slight extent, at least, under its influence.

With these preliminaries I may proceed to deal with the series of cases treated by salicylate of soda. I have said they were 84 in number ; and the course of each case, especially with reference to the salicylate, is shown graphically in the accompanying chart. (This chart\* contained 86 cases ; 4 of them—Nos. 6 to 9—were treated partly by salicin and partly by other methods ; they were therefore excluded from the analytical summary. Of the remaining 82, two were re-admitted, and were reckoned for the sake of convenience as new cases, thereby bringing the total to 84.)

#### GENERAL ANALYSIS.

*Sex.*—Of these 82 cases, 41 were males and 41 females.

*Age.*—There were under 10 years ... ... 2 cases.

10 and „	20 „	... ..	25 „
20 and „	30 „	... ..	46 „
30 and „	40 „	... ..	5 „
40 and „	50 „	... ..	3 „
	60 „	... ..	1 „

(Nos. 10A and 31A, readmitted, not included.)

*Number of Attacks.*—The number of attacks of rheumatism from which the patient suffered was—

1st attack	...	...	...	...	38 cases.
2nd „	...	...	...	...	24 „
3rd „	...	...	...	...	13 „
4th „	...	...	...	...	3 „
5th „	...	...	...	...	4 „
					—
					82

\* Not published.

*Date of admission.*—There were admitted on the—

	2nd day of declared symptoms	...	2 cases.
3rd	"	"	14 "
4th	"	"	8 "
5th	"	"	5 "
6th	"	"	13 "
7th	"	"	10 "
8th	"	"	11 "
9th	"	"	1 "
10th	"	"	3 "
12th	"	"	1 "
14th	"	"	8 "
17th	"	"	1 "
In 3rd week	"	"	1 "
" 4th "	"	"	3 "
" 5th "	"	"	1 "
2nd month	"	"	2 "

*Severity of Attack.*—As the terms "acute" and "sub-acute" are too vaguely separated to be of much use as a means of classification, and yet, as it seems to be important to have some means of ascertaining whether the drug acts as well in mild as in severe cases, the series has been divided into six classes, according to the maximum temperature attained within the first twenty-four hours after admission, excluding the earliest record as being liable to be influenced by removal to hospital.

The classification results as follows:—

Above . . .	104° .....	Class I .....	5 cases
104° and above 103°	.....	" II .....	9 "
103°	102° .....	" III .....	15 "
102°	101° .....	" IV .....	23 "
101°	100° .....	" V .....	21 "
100°	98·4° .....	" VI .....	11 "

All of these cases are complete, with the exception of one (No. 84) still in hospital. One case died.

#### SPECIAL ANALYSIS, WITH REFERENCE TO TREATMENT.

These cases will be analysed under the following heads:

1. Duration of pyrexia.
2. Duration of joint affection, as indicated by pain.

3. Relapses (*a*, of pyrexia; *b*, of joint affection), as to their time of occurrence, duration, and relation to the drug.
  4. Duration of stay in hospital.
  5. Total duration, from commencement of symptoms to date of discharge.
  6. Frequency of pericarditis, endocardial murmurs, and their relation to treatment.
  7. Other complications.
  8. The toxic effects of the drug, or "salicylism."
1. *Duration of pyrexia.*—As there is not by any means an invariable connexion between the subsidence of the pyrexia and the disappearance of joint pain, even in cases uncomplicated by pericarditis or visceral inflammations, I have thought it well—following, indeed, Dr. Warner's example—to separate these two main features of rheumatic fever, in the hope, also, that I may be able to show whether the drug has more influence over the pyrexia than over the articular manifestation, or the reverse. Speaking generally, I can quite corroborate the statements made as to the very striking amelioration produced by the drug in the severity of the joint affection; but, also, as a general rule, it will, I think, be found that its influence over the pyrexia is even more striking, and that the pains in joints persist for a shorter or longer period after the temperature has become normal.

There are two cases in this series that stand apart. One is No. 84, still under treatment, and for seventeen days rebellious to salicylate of soda, given for ten days in doses of 160 grains, so that it was discontinued, and has only lately (thirtieth day) been re-prescribed. In her, neither pyrexia nor articular inflammation has subsided for upwards of four weeks. The other is No. 25, which, being quite peculiar, has been excluded from these statistics. In that case the joint affection was mild but variable, eventually becoming chronic, and accompanied by much muscular wasting. The temperature, however, attained great height, particularly during the first four weeks after admission, calling for treatment by cold baths. The hyperpyrexia was genuine, the skin being burning hot, and its recurrence regular every afternoon, but the patient did not exhibit the usual nervous symptoms of cerebral rheumatism, and her life never seemed to be endangered. She remained in the hospital 154 days. To include such a case in the statistics of only eighty-four cases would materially modify the conclusions, and I

therefore propose to omit it statistically. I need only remark that the high temperatures were developed whilst she was taking the salicylate, which was discontinued when shown to have no appreciable influence upon the pyrexia.

TABLE A.—*Showing the days on which the primary pyrexia and joint pains subsided, the day of discharge from hospital, and the number of relapses, in connexion with the severity of the attack (maximum temperature).*

No. of case.	Day of subsidence of pyrexia.	Day of subsidence of joint pains.	Day of discharge.	Relapses.	
				P.	J.
CLASS I.—Above 104°—104°. Cl. I.—Above 104°.	1	11	13	38	0 0
	25	—	—	154	0 0
	70	8	5	28	0 0
	72	3	7	55	2 1
	81	5	10	82	3 3
CLASS II.—108°—108°.	12	9	3	43	1 0
	16	19	9	61	0 0
	26	5	8	15	0 0
	32	4	7	28	0 0
	60†	8	8	88	0 0
CLASS III.—Above 108°—108°.	64	4	4	21	0 0
	71	10	7	41	1 1
	83	4	4	17	0 0
	84	—	—	—	0 0
	3	5	4	57	0 1
CLASS IV.—Above 108°—108°.	4*	19	5	20	0 0
	10	3	5	40	0 0
	10A	5	7	34	0 0
	11§	23	8	52	0 0
	18‡	11	11	59	2 2
CLASS V.—Above 108°—108°.	28	5	8	95	4 3
	31A	4	5	38	1 1
	33	24	25	81	1 1
	35	4	7	28	0 0
	43	6	10	28	0 0
CLASS VI.—Above 108°—108°.	52	4	6	55	0 0
	76	19	19	38	1 1
	79	15	16	17	0 0
	80*	5	6	17	0 0

\* Salicylate of soda was commenced on the 2nd day.

† " " " " 4th day.

‡ " " " " 9th day.

§ " " " " 10th day.

No. of case.	Day of subsidence of pyrexia.	Day of subsidence of joint pains.	Day of discharge.	Relapses.	
				P.	J.
5	3	5	27	0	2
14	3	8	42	3	2
17	4	4	44	1	3
19	29	3	77	0	0
21	25	23	49	0	0
22	5	6	37	1	1
23	14	19	33	0	0
24	3	5	33	0	0
38	5	8	34	0	0
42	2	7	36	1	0
44*	15	16	42	0	0
47	2	7	61	2	2
50	2	10	28	0	0
51	6	16	55	1	1
58	5	16	34	2	2
59	3	4	17	0	0
61	3	4	9	0	0
62*	7	5	20	0	0
63	4	4	19	0	0
65	11	12	28	3	3
67	3	3	26	0	1
73*	2	5	27	0	0
86	6	5	20	2	1
2	4	5	5	0	0
13	2	6	15	0	0
27	4	3	11	0	0
29	4	4	19	0	0
30	2	2	22	0	0
31	4	3	8	0	0
34	4	4	15	0	0
36	4	3	51	0	0
40†	3	5	58	1	3
41	3	8	28	1	1
45	3	5	18	0	0
46	3	4	24	0	0
48	4	7	28	1	1
49	8	10	28	0	0
53	3	16	73	1	2
54	3	7	34	1	1
55	4	11	83	4	3
57	15	15	35	1	1
68	36	3	85	3	6
69	4	3	49	0	0
78	13	10	17	0	0
15	4	5	22	0	0
20	3	6	26	1	0
37	5	4	53	1	0
39	3	4	26	0	0
56	2	9	48	1	2

\* Salicylate of soda was commenced on the 4th day.

†      "      "      "      "      7th day.

CLASS IV.—101°—102°.

CLASS V.—100°—101°.

CLASS VI.  
100° and below.

	No. of cases.	Day of subsidence of pyrexia.	Day of subsidence of joint pain.	Day of discharge.	Relapses.	
					P.	J.
CLASS VI <i>(continued).</i>	66	3	10	44	0	1
	74	—	2	13	0	0
	75	8	4	6	0	0
	77	2	9	17	0	0
	82	3	10	23	0	0
	85	2	2	6	0	0

The results given in Table A show the primary pyrexia to subside in fifty-eight out of seventy-nine by the fourth day of treatment. In one case the temperature was never 99°, and in two it had fallen to normal before the salicylate was given. In some cases the pyrexia was more prolonged—e.g. to twenty-third, twenty-fourth, twenty-eighth, and thirty-fifth day of treatment (*vide* Chart No. 1).

CHART 1.—*Showing the number of cases and the day of treatment upon which pyrexia and joint pain subsided.*



Pyrexia is denoted by the dotted line, joint pain by the continuous line.

In Table A the cases are arranged in the classes above-mentioned, and according to this, the average duration of the pyrexia in each class from the commencement of treatment was as follows:—

		Subsidence on	Aft. treatment of
Class I. (4 cases), exclud.	No. 25	5th day	4 days.
Class II. (8 cases), exclud.	No. 84	8th day	6·5 days.
Class III. (15 cases)	...	10th day	8·2 days.
Class IV (23 cases)	...	7th day	5·5 days.
Class V. (26 cases)	...	5·7th day	4·4 days.
Class VI. (11 cases)	...	2·7th day	1·7 days.

Thus the duration of the pyrexia is in tolerably exact relation to the maximum temperature attained—at any rate, when the latter does not exceed 103°.

The average duration of pyrexia calculated from the whole number of cases (with the exceptions named) was thus 6·4 days, the temperature becoming normal on the fifth day of the treatment by salicylate.\*

2. *Duration of joint affection.*—This has been calculated upon the same plan as the pyrexia, with the result (*vide* Table A, and Chart No. 1) that 39 out of 80 cases lost their pain after four days' treatment, and 53 in six days. Of this number, 5 lost their pain on the first day, 10 on the second, and 2 before salicylate was given. In a few cases the joint affection was long-continued and persistent—most remarkably so in No. 84, now in the hospital.

As regards the relation of subsidence of articular manifestations, when treated by salicylate, to the severity of the primary fever, we have the following average results:

		Subsidence of joint pain.	After treatment of
Class I.	...	6·25th day	5·2 days.
Class II.	...	6·25th day	4·7 days.
Class III.	...	9·4th day	7 days.
Class IV.	...	8·3th day	6·8 days.
Class V.	...	6·4th day	5 days.
Class VI.	...	6th day	5 days.

Here again Class III stands highest, but not much above Class II in yielding to the treatment. The average of the whole number

\* For the calculated average duration of pyrexia when the day on which the case was admitted is taken into account, see below, on "Total duration of illness."

gives a subsidence of pain on the 7·1 day from admission, or after 5·6 days of treatment by the drug.

I think we may infer from this that the salicylate did lessen the joint pain, especially as in those cases in which its administration was withheld for a time the pain did not abate. It further appears that although we have only to do with cases which are treated by the drug, such a cause as that of withholding its administration is sufficient to account for the difference between the day of subsidence of pain when calculated from admission, and when reckoned from the time of commencement of the drug.

3. *Relapses*.—In the Chart\* and in Table A all information is given about this important feature of rheumatism, and the statistics I shall give have been compiled from a careful study of these tables. (Cases 25 and 84 are again excluded.) As pyrexial and articular manifestations are no more entirely coincident in the relapse than in the primary attack, I have separated them as in dealing with the latter.

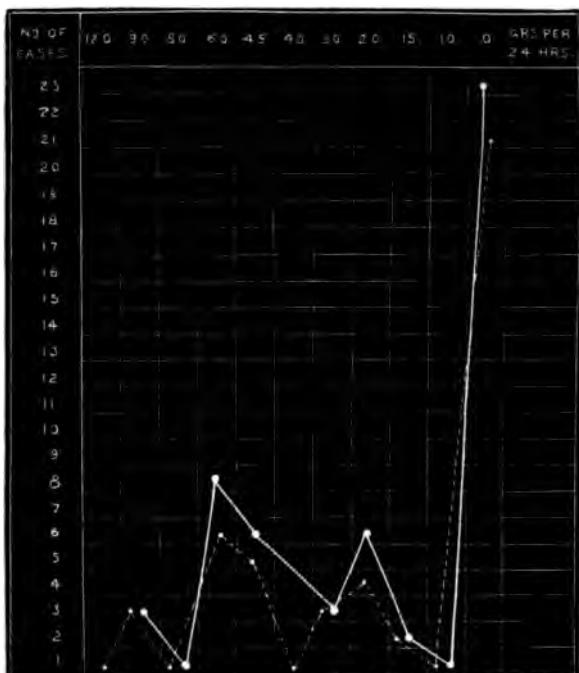
a. *Relapse of pyrexia*.—Out of 82 cases there occurred a more or less marked relapse of pyrexia in 29 or 35·3 per cent.; in 8 not accompanied by relapse of joint pain. In these 8 cases the relapse of temperature was mainly due to the supervention of tonsillitis, or pericarditis, or to change of diet.

Of these 29 cases 18 occurred with one relapse, 5 with two, 4 with three, and 2 with four—making a total of 48 relapses for us to study. These relapses varied from one to thirty days in duration, the average duration being 7·2 days. The relapse commenced on the fifth day in 2, on the seventh in 1, on the eighth in 1, on the ninth in 2, and on days beyond that up to the sixty-eighth in 1 case, when four relapses occurred. The average day of commencement was the twenty-third after admission, and of cessation the thirty-first.

In relation to the dose of salicylate, I find that 1 occurred whilst 120 grains were being given, 3 under 90 grains, 1 under 80, 6 under 60, 5 under 45, 1 under 40, 3 under 30, 4 under 20, 2 under 15, 1 under 10, and no fewer than 21 out of the 48, when the drug had been left off. (See Chart 2.)

A further analysis of these 21 cases shows much diversity as to the time after the drug was discontinued at which the pyrexial relapse took place, viz.:

\* Unpublished.

CHART 2.—*Showing the relapses in relation to the dose of the drug.*

Pyrexia is denoted by the dotted line, joint pain by the continuous line.

On the day salicylate of soda was left off—in 1 case.

„ 1st day after „ „ 1 „

„ 2nd „ „ „ 2 cases.

„ 3rd „ „ „ 6 „

„ 4th „ „ „ 2 „

„ 5th „ „ „ 1 case.

„ 6th „ „ „ 1 „

„ 7th „ „ „ 3 cases.

„ 8th „ „ „ 2 „

„ 14th „ „ „ 1 case.

(A previous relapse occurring from 3rd to 6th day.)

„ 16th „ „ „ 1 „

(A previous relapse occurring from 3rd to 7th day.)

(See Chart No. 3.)

CHART 3.—*Showing the number of days after the discontinuance of salicylate that relapse occurred.*



Relapse of joint pain, 23; of pyrexia, 21.

NOTE TO CHART 3.—This chart requires the following corrections to be made in it:—For 4 read 6; and under the 9th day, insert 2 cases of relapse of joint-pain (continuous line).

b. *Relapse of joint pain.*—This being dealt with in the same way gives 29 cases out of the 82 (or 35·3 per cent), 9 of which were unaccompanied by rise in temperature. Fifteen of these cases were marked by one relapse, 7 by two, 6 by three, and 1 by six, giving a total of fifty-three relapses to be analysed. These occurred at varying periods from the eighth to the seventy-third day after admission, the last being one of a series of six relapses in the course of the same case. The average date of commencement of the relapse was the 26th day, of its cessation the 29·2nd day, the average duration being about three days and a half.

In relation to the administration of salicylate of soda there occurred under doses of—

90 grains ... ...	3 relapses.	30 "	... ...	3 relapses.
80 " ... ...	1 "	20 "	... ...	6 "
60 " ... ...	8 "	15 "	... ...	2 "
45 " ... ...	6 "	10 "	... ...	1 "

And when none of the drug was being taken 23 cases of relapse took place. (See Chart No. 2.)

These 23 cases of relapse of joint pain took place—

On the day the salicylate of soda was left off—in 1 case

„ 1st day after	"	"	1 "
„ 2nd " "	"	"	1 "
„ 3rd " "	"	"	3 cases
„ 4th " "	"	"	2 "
„ 5th " "	"	"	3 "

On 6th day after salicylate of soda was left off—in 3 cases

” 7th	”	”	”	2 ”
” 8th	”	”	”	1 case
” 9th	”	”	”	2 cases
” 10th	”	”	”	2 ”
” 15th	”	”	”	1 case
” 19th	”	”	”	1 ”

(See Chart No. 3.)

The deduction from these statistics, then, would be that the withholding of the drug renders the patient more liable to pyrexial and articular relapses than if its administration be continued; but that the relapse may occur in spite of fairly considerable doses being given, as many occurring under doses of sixty grains and upwards for twenty-four hours, as under smaller doses.

I have also compared the liability to relapse according to the severity of the primary fever, with this result:—

Class	Pyrexial relapse.	Articular relapse.	Total cases.
I.....	2	2	4
” II.....	2	1	8
” III.....	5	6	15
” IV.....	9	10	23
” V.....	8	8	21
” VI.....	3	2	11

The proportion of relapsing cases is about one-half of the total in each class, except the mildest, and those between 103 and 104, in each of which classes it is about one-fourth. The percentage of relapses in these cases is certainly high—viz., about 34 per cent. of the total; and Dr. Fagge's 93 out of 355 give about 26 per cent. Comparing, as he did, these cases which were relieved in five days, I find as regards *pyrexia* that 21 out of 61 relapsed, as regards *joint pain* 11 out of 39. It is important to mention these differences in our results as possibly they may be accounted for by differences in the mode of administration of the drug.

Lastly, before leaving this question of relapses, I should like to recall the fact that they may be promoted by a too early transition from a milk to a solid diet, or by too early getting up from bed. The readiness with which the salicylates subdue the fever and pain is liable to lead to too hasty changes in these respects, and therefore indirectly to relapse. I have no figures to bear this out, but I am

certain that I have seen relapses occur under the use of the salicylate which one might fairly attribute to change of diet or abeyance of rest.

4. *Duration of stay in hospital.*—Not having sufficient data to give statistics concerning the length of confinement to bed, I have no means of indicating the period of convalescence except by taking the total time in the hospital. As a rule, I suppose the patients are up and on full diet for quite a week before their discharge, except in mild cases. Again, excluding No. 25 as being a most exceptional case, I find that the average stay in hospital was 36 days, or, according to the primary severity :—

Class	I.	...	...	Average stay of 49·7 days.
"	II.	...	...	32·0 "
"	III.	...	...	43·0 "
"	IV.	...	...	33·6 "
"	V.	...	...	32·6 "
"	VI.	...	...	25·0 "

Some of the cases were very long retained—e.g., one discharged on the 95, one on the 85th, one on the 82nd, one on the 77th, one on the 33rd, and eleven remained in from the 50th to the 65th day. It would be interesting to calculate the duration with the amount of salicylate given, to test the opinion that patients become more debilitated and anaemic under its use. Certainly these cases are of long average duration, for I find that of 817 treated in 1872-73, when I was medical registrar, the average length of stay was 31·4 days.

5. *Total duration from onset of symptoms.*—There were 76 cases in which the number of days that the symptom of pain had been present was recorded ; and by adding this period before admission—varying from one to sixteen days—to the duration of stay in hospital, the average total duration of these cases comes to forty days; or the average of duration, according to time of admission :—

Day of admission.	No. of cases.	Calculated average duration of		
		Primary pyrexia.	Joint pains.	Total illness.
2nd.....	2 ...	4·0 days ...	6·5 days ...	28·5 days
3rd.....	14 ...	7·4 " ...	7·8 " ...	32·2 "
4th.....	8 ...	8·4 " ...	11·5 " ...	31·0 "
5th.....	5 ...	9·0 " ...	10·6 " ...	33·0 "

Day of admission.	No. of cases.	Calculated average duration of		
		Primary pyrexia.	Joint pains.	Total illness.
6th.....	13 ...	12·4 „ „	13·2 „ „	35·8 „
7th.....	9 ...	12·4 „ „	15·0 „ „	41·7 „
8th.....	11 ...	12·5 „ „	13·6 „ „	40·0 „
9th.....	1 ...	13·0 „ „	16·0 „ „	23·0 „
10th.....	3 ...	36·0 „ „	17·0 „ „	68·0 „
12th.....	1 ...	47·0 „ „	14·0 „ „	84·0 „
14th.....	8 ...	20·6 „ „	23·1 „ „	66·0 „
17th.....	1 ...	35·0 „ „	21·0 „ „	36·0 „

N.B.—Calculated on the assumption that the pyrexia and joint pains existed during the whole period of illness before admission.

6. *Frequency of pericarditis, endocardial murmurs, &c.*—I must content myself with a very condensed summary of the results obtained from a statistical examination of cardiac complications.

Pericarditis was marked in 11 cases, or 18 per cent., as against 29·8 per cent. in 1872-3. Pericardial friction was audible on admission in three cases, became evident on the fourth, seventh, and seventy-seventh day (No. 81) in others. The duration of such signs varied from five, seventeen, thirteen, fifteen, to twenty days, and in one case was present with intermissions from the first to the fifty-seventh day. Although the average number of cases is low, yet it cannot be said that the drug had much influence upon it.

Endocardial bruits were present in a remarkably large number of cases, there being only 20 in which they were not detected at one time or another.

I find that apex systolic bruits—by far the most frequent of such signs—were present in 21 cases on admission, that they were altered or added to by other murmurs in 5. In 10 cases such bruits were first noted at varying intervals after admission, and therefore whilst under treatment. Of the total number of 31 there were 6 cases in which these murmurs disappeared before discharge. These bruits were sometimes combined with pulmonary murmurs, which occurred alone in five cases.

Presystolic bruits occurred in 7 cases, and were altered or added to in 2. Murmurs denoting both mitral regurgitation and aortic obstruction were met with in 5, and were altered in 3 during their stay. Double mitral and aortic bruits occurred in 9 cases, and in

one case there arose an aortic obstructive murmur after the patient's admission.

I am not prepared to say that all of the apex murmurs were due to endocarditis, but I cannot differentiate them ; and if those cases in which the murmur faded are excluded from the category of organic change, there still remains a number largely in excess of the proportions usually noted.

7. *Other complications.*—These comprise pneumonia in 2 cases, pleurisy in 2, bronchitis in 6, and tonsillitis in 8. In 1 case there was localised muscular atrophy, evidently due to myelitis (No. 57) ; 1 case was prolonged by ascites and early cirrhosis of the liver ; and in 1 an attack of rötheln occurred in the course (No. 81). Fibrous nodules over tendons &c. were noted in 2 cases.

8. *Toxic effects, or "salicylism."*—Symptoms attributable to the toxic effects of the drug itself, and of sufficient prominence to be noted, are recorded in 24 cases, or 28·5 per cent. Vertigo was complained of in 2 cases, headache in 8, tinnitus in 10, and deafness in 11. Delirium occurred in 2. Vomiting took place in 3—in 1 independently of the drug, which was in consequence given by enema. Abdominal pain was complained of in 2 cases. Retention of urine occurred in 3 cases, and was followed in 1 by cystitis. Albuminuria is noted in only one case, and in that in very small amount. It could hardly be attributed to the drug ; and this solitary instance is in marked contrast with the results furnished by Dr. Isambard Owen.\*

In 3 cases the toxic effects appeared under 120-grain doses—viz., on the second day in 2, on the fourth day in 1. The dose was reduced to 60 grains in one, to 20 in the other, and omitted in the

\* Amblyopia, it appears, must be added to the list of symptoms attributed to salicylism. At any rate, if a case related in the 'Revista de Ciencias Medicas,' of Barcelona, and quoted in the 'Wiener Allgem. Med. Zeitung,' for Dec. 20th, 1881, is to be so interpreted. A girl, sixteen years old, took eight grammes (about 120 grains) of salicylate of soda in ten hours. Three hours after the last dose she became blind, complained of headache, and somnolence. There was marked mydriasis, but the sensitiveness of cornea and conjunctiva was unimpaired. The fundus oculi was normal. Marked deafness. Heart sounds weak ; pulse small. The urine gave no reaction of salicylic acid, nor of albumen. At the end of ten hours the amaurosis disappeared ; the mydriasis and the deafness persisting for some time longer. Cases of slight visual disorder by Buss, Jür-bringer, and Schulze are referred to ; and also two cases of amaurosis in cinchonism by von Graefe.

third. In 15 of these cases the toxic effects were produced by 90-grain doses (per twenty-four hours), the average time for their appearance being, in 14 cases, on the 3<sup>rd</sup> day. In one case deafness was not complained of until the fifteenth day, being one day after the drug had been omitted. In one case the symptoms followed doses amounting to 80 grains in the twenty-four hours. They disappeared on reduction of the dose, but recurred on raising it to 120 grains on the twelfth day, again disappearing on the fifteenth day, when it was reduced to 80 grains. In one case deafness occurred after three days on 90 grains and two days on 60 grains. In one deafness and headache did not occur till after the patient has taken 120 grains for five days, 80 grains for nine days,

TABLE B.—*Analysis of cases in which relapse occurred with reference to subsidence of primary symptoms.*

*Pyrexia.*

Day of treatment. Subside- dence of primary pyrexia.	Number of cases.	One relapse.	Two relapses.	Three relapses.	Four relapses.
Bef sod. sal was given	3†‡	1	0	0	0
1	8	2	1	0	0
2	20	4	2	1	0
3	20†	3	0	0	1
4	10	2	1	1	1
5	3	1	1	0	0
6	0	0	0	0	0
7	1	0	0	0	0
8	1	1	0	0	0
9	1	1	0	0	0
10	2	0	0	1	0
11	1†	0	0	0	0
12	1	0	0	0	0
13	2§	0	0	0	0
14	2	1	0	0	0
15	0	0	0	0	0
16	1*	0	0	0	0
18	2	1	0	0	0
22	0	0	0	0	0
23	1	1	0	0	0
24	1	0	0	0	0
28	1	0	0	0	0
35	1	0	0	1	0

\* Salicylate of soda was commenced on the 2nd day.

†      "      "      "      4th day.

‡      "      "      "      7th day.

§      "      "      "      10th day.

*Joint pain.*

Day of treatment. Subsi- dence of joint pain.	Number of cases.	One relapse.	Two relapses.	Three relapses.	Six relapses.
Bef sod. sal was given	2*	0	0	1*	0
1	5	0	0	0	0
2	10	2	1	0	1
3	14	1	0	1	0
4	10	2	1	1	0
5	4	1	0	0	0
6	10	3	2	0	0
7	4	1	0	1	0
8	3	0	1	0	0
9	7	1	0	0	0
10	1	0	0	1	0
11	1	0	0	1	0
12	2	0	0	0	0
13	0	0	0	0	0
14	1	1	0	0	0
15	4	1	2	0	0
16	0	0	0	0	0
18	2	1	0	0	0
22	1	0	0	0	0
23	0	0	0	0	0
24	1	1	0	0	0
28	0	0	0	0	0
35	0	0	0	0	0

\* Salicylate of soda was commenced on the 7th day.

†       "       "       "       "       10th day.

*Summary of Relapses.*

Of pyrexia :           18 with one relapse.  
                         5 with two relapses.  
                         4 with three relapses.  
                         2 with four relapses.

—  
 29 in 82 cases.

Of joint pain :           14 with one relapse.  
                         8 with two relapses.  
                         6 with three relapses.  
                         1 with six relapses.

—  
 29 in 82 cases.

Duration of relapses : Pyrexial—From 1 to 30 days.

Average, 7·2 days.

Articular—From 1 to 15 days.

Average, 3·5 days.

and 60 for thirteen days. In one case an enema given every four hours, by which 120 grains in all were administered for twenty-four hours, produced toxic symptoms, which were continued on giving 40 grains by mouth on the eighth day, reduced to 20 on the ninth, and 15 on the eleventh, when the deafness and tinnitus disappeared. In 2 cases doses of 60 grains (per twenty-four hours) produced slight symptoms, but the dose was not reduced, and the effect passed off.\*

Lastly, it is said that salicylate of soda is a cardiac depressant. I am not aware whether this has been put to the test of physiological experiment, and it would be interesting to learn how far this supposed action depends upon the base with which the acid is combined.† I cannot afford much evidence either in support of or in opposition to this view; and it may be that the doses in which it was prescribed in these cases did not suffice to bring this serious effect to light. I must, however, mention one case—viz., No. 81—where there were severe vegetating endocarditis, little joint affection, a great tendency to high and irregular temperature, and towards the close pericarditis,—a case that proved fatal on the eighty-second day. The patient had not taken salicylate of soda all this time, and never more than 90 grains, which were prescribed on her admission. The drug was suspended on the ninth, and renewed on the sixteenth day, but none was given during the last thirty days of life. I fear that the result would have been the same under any treatment.

Although I cannot give analyses of the cases in which depressing effects were shown, I can state in how many cases stimulants were prescribed, and this may be taken as some indication of the number

\* Whilst writing this I came across a clinical lecture by M. Raymond ('Prog. Méd.', Dec. 3rd, 1881), upon a fatal case of acute rheumatism, with pulmonary complications. The patient was a lad, seventeen years of age, who presented great depression of pulse; no cardiac complications, but double broncho-pneumonia. On the afternoon of the day of admission he became violently delirious, then comatose, dying the same evening. He had been prescribed salicylate of soda in doses of two grammes (eighty grains) every three hours, and had taken the second dose an hour before the cerebral symptoms set in, or six hours before death. M. Raymond briefly acquits the drug of being the cause of these symptoms, as some might assert, and adds that, "although occasionally in inveterate alcoholic subjects with badly acting kidneys salicylate of soda may cause grave phenomena, yet it may most surely be affirmed to be innocent of the majority of those evils that have been attributed to it, and its adversaries of yesterday prescribe it to-day in large doses, like the rest of the world."

† Opposed to this suggestion is the fact that the urine hardly ever becomes alkaline under the use of the drug.

of cases in which the pulse flagged. This number was 25, and of these 8 were cases of pericarditis, and 1 of hyperpyrexia. It would be interesting to know whether in the presalicylic days alcohol was more often prescribed, although that would only be a very rough mode of estimation.

I believe that my colleague, Dr. Cayley, is in the habit of prescribing salicylate of soda in cases of enteric fever with the view of preventing pyrexial relapse, and if the drug had much depressing action on the heart it should be especially seen in such cases. The object, it appears to me, should be to give the drug in such amount that its toxic effects are not produced, but its remedial effects unimpaired. The comparative freedom of this series of cases from alarming toxic effects may be due to such caution being observed; not wholly, however, for it seems reasonable to believe that some of the severer symptoms described under "salicylism" are due to impurities in the drug which were more common formerly than now.

#### CONCLUSIONS.

1. That in the majority of cases salicylate of soda speedily reduces the pyrexia and articular pain of acute rheumatism.
2. That unless the administration be long continued, relapses both of pyrexia and of joint affection are liable to occur.
3. That such relapses are not *wholly* prevented from arising during the administration of the drug, and that in some cases they are distinctly due to the lack of proper precaution in matters of diet and rest, owing to the freedom from acute symptoms enjoyed by the patient.
4. That the best method of its administration is in regulated doses, gradually diminished both as to amount and frequency.
5. That no definite influence upon the cardiac or other complications can be observed (although in this series the number of cases of pericarditis was smaller than the average), and that, indeed, both pericarditis and endocarditis may develop whilst the patient is under its influence.
6. That the toxic effects described are serious in proportion to the largeness of the dose, and, perhaps, to the state of impurity of the drug, but that a few patients seem very tolerant of it (*e.g.* No. 84). Its alleged depressing action on the heart has to be proved by experiment, and may be due to the soda.

7. Salicylate of soda is certainly *anti-pyretic*, and, to a considerable degree, *anti-rheumatic*. That its employment does not appreciably diminish the time necessary to keep the patient at rest more than under other methods of treatment, but that the immense relief given by its use in the abatement of pain and fever—a relief not to be estimated by statistics,—renders it by far the most valuable remedy for the disease at present known.

I cannot conclude without adding my obligations to Messrs. Davis, Hartley, Minchinton, Sturridge, and Ranson, who have in turn held the office of resident physician's assistant during the period over which the above observations extend.

**Dr. MACLAGAN** spoke as follows:

Whatever difference of opinion regarding the use of the salicyl compounds in acute rheumatism may appear in the course of the discussion on this subject, there can be but one opinion regarding the value of the statistics which have been placed before us, and the lucid manner in which their details have been expounded. The evidence afforded by these statistics is highly favourable to the salicyl treatment. In that respect they agree with nearly all that has been written on the same subject by observers in all parts of the world. In the history of practical therapeutics there is no more remarkable circumstance than the unanimity and rapidity with which the salicyl treatment of acute rheumatism has replaced all other methods of treating that disease.

It is not my intention to place before the Society any fresh statistics of my own. My results have been given to the profession, and I would not now occupy time by repeating them in detail. I hold in my hand, however, a general statement of the results of the treatment of acute rheumatism in most of the large provincial hospitals of Great Britain to which I would for a moment direct attention. In answer to queries addressed to fifty-nine hospitals, each containing 100 beds or more, I received answers from all except fourteen. Of the forty-five from which answers were received, two have no experience of acute rheumatism, two decline to give information, and two have not tried the salicyl treatment. The general results got by the remaining thirty-nine are embodied in the table on page 107.

The general results obtained in all these hospitals are quite in accordance with those got in the metropolitan hospitals, as exem-

plified by the statistics placed before us to-night. We thus find that the salicyl treatment of acute rheumatism has been all but universally adopted in the large hospitals of Great Britain, and with results which are on all hands proclaimed to be satisfactory. The only hospital statistics which seem at all to tell against this treatment are those from the Middlesex Hospital which Dr. Greenhow laid before the Clinical Society last year. It had always seemed to me that Dr. Greenhow's inferences were at variance with his facts. This it was my intention to have pointed out to-night; but the true value of Dr. Greenhow's facts, and the inconsistency of his inferences with these, have been so clearly demonstrated by Dr. Fagge that it is not necessary for me now to do more than express my entire concurrence in all that Dr. Fagge has said regarding them.

Passing from statistical details, I should like to make a few remarks on two points which have been indicated as being among those which might with advantage be discussed—first, is the action of the salicyl compounds anti-rheumatic or anti-pyretic? and, second, what is their best mode of administration?

First, as to their mode of action. An anti-pyretic is a remedy which allays fever; an anti-rheumatic a remedy which mitigates or stops the rheumatic process. In acute rheumatism the salicyl compounds both allay fever and stop the rheumatic process; and the point for us to consider is, which of these two is the real curative one.

Were an anti-pyretic action all that was required for the arrest of acute rheumatism, we should have more potent agencies in the external application of cold, and in the internal administration of quinine; for all observation shows that as anti-pyretics they are much more potent than salicin or salicylic acid. But they do not shorten the course of rheumatic fever as the salicyl compounds do. Were salicin and salicylic acid only anti-pyretic in their action, and were their curative effects in acute rheumatism due to this action, we should find them exercise a like action in other febrile ailments; but rheumatic fever is the only form of fever in which they exercise a distinctly curative effect, in no other ailment do they have anything like the same action. Moreover, to allay fever is not enough to stop the course of rheumatic fever, for the febrile state is not the only condition with which we have to deal in that disease; it is not even the most prominent or most characteristic. Much more

Name of Hospital.	Informant.	Mode of treating Acute Rheumatism.	Results.	Remarks.
1 Northern Hospital, Liver-pool	Dr. Rushton Parker	Salicylate of soda.	" Well satisfied with them."	Reference to unpleasant physiological effects.
2 Southern Hospital, Liver-pool	Senior House Surgeon	Sal. of soda; occasionally salicin	" Most satisfactory,"	
3 Royal Infirmary, Liverpool	Resident Medical Officer	Salicylate of soda and salicin	" Satisfactory "	" Salicin not ordinarily employed, unless depressing effects are feared from the use of the soda."
4 Queen's Hospital, Birmingham	House - Physician	Salicylate of soda	" Pain relieved in 24 hours, as a rule "	" Sometimes causes noises in head, deafness, vomiting; also appears to produce a tendency to syncope."
5 General Hospital, Birmingham	Dr. Russell	"	" Experience largely in favour of it "	Frequent relapses; one case of sudden death.
6 North Staffordshire Infirmary	Resident Medical Officer	Salicin and salicylic acid	" Symptoms subside in from 12 to 48 hours "	" Salicin is preferred, since it has seemed to cause less stomach and cerebral disturbance, and to be probably as effective."
7 Royal Albert Hospital, Devonport	"	Salicylate of soda	" Satisfactory "	Very few cases.
8 Sussex County Hospital, Brighton	House-Surgeon	"	" Looked upon as a specific,"	See much rheumatic fever at Brighton.
9 Worcester Infirmary	"	Salicylate of soda and salicin	" Very satisfactory,"	
10 Taunton and Somerset Hospital	"	Salicylate of soda	" Most satisfactory "	" Pain diminishes much more rapidly than under former methods of treatment."
11 Bristol Royal Infirmary	Mr. Watson	"	" Free from pain and fever within 48 hours "	
12 Bristol General Hospital	Dr. Bryden	"	" After 7 or 8 doses, pains abated "	" In majority of cases temperature is normal in 8 or 4 days." Treatment does not prevent heart complications.

Name of Hospital.	Informant.	Mode of treating Acute Rheumatism.	Results.	Remarks.
13 Chester General Infirmary	House-Surgeon	Salicylate of ammonia	"Favourable"	"The salicylates appear to cut short the acute symptoms rapidly."
14 Hull Infirmary	Mr. Haggard	Salicylate of soda	"Checks the disease"	"After 3 or 4 doses (15 to 20 grains) there is always a marked diminution of joint pain."
15 Lincoln Hospital	House - Physician	"	"Satisfactory"	"The pain and temperature rapidly diminish when given in 20-grain doses every two hours."
16 Devonshire Hospital, Buxton	Mr. Lorimer	"	"Decidedly in its favour"	"The rapid reduction of temperature and relief from pain, and the shortness of the attack in uncomplicated cases, have been singularly gratifying."
17 North Devon Infirmary, Barnstaple	Mr. Ware	Salicylate of soda and salicin	"Almost invariably good"	"Rapidly reduces temperature and relieves pain. Salicin is sometimes borne when the salicylate nauseates."
18 Salisbury Infirmary	House-Surgeon	Salicylate of soda	"Relieves pain quickly"	"Slight head symptoms are produced in the majority of cases."
19 Stafford Infirmary	"	"	"Temperature becomes normal, and pain ceases in from 12 to 48 hours"	"Lowers temperature and eases pain"
20 Derby Infirmary	"	"	"Rapid and great benefit"	"Reduces temp. and relieves pain"
21 Devon and Exeter Hospital	Dr. Blomfield	Salicin and salicylate of soda	"Preferred to other methods"	"One of the physicians (Dr. Davy) almost invariably uses salicin, not salicylate."
22 Leicester Infirmary	House - Physician	Salicylate of potash and salicin	"Extremely satisfactory"	"The temperature is almost always reduced and the pain relieved in from 15 to 20 hours."
23 Royal Hampshire Hospital, Winchester	House-Surgeon	Salicylate of soda	"Pain relieved, as a rule, within 13 hours"	
24 Addenbrooke's Hospital, Cambridge	Mr. Shann	Salicylic acid		
25 Royal Berkshire Hospital, Reading	Mr. F.W. Sutton	Salicin and salicylate of soda		

27	Children's Hospital, Manchester	Mr. C. R. Graham House-Surgeon	Salicylate of soda	"Very good"			
28	Huddersfield Infirmary		Salicylate of soda and salicylic acid	"Quite satisfactory"	"Speedy relief of the joint pain and reduction of abnormal temperature."		
29	Sheffield Public Hospital	Mr. W. S. Porter	Salicylate of soda "	"Satisfactory"	"Have seen one or two cases of marked cardiac depression when its administration in large doses has been too prolonged."		
30	Sheffield General Infirmary	House - Physician	"	"Very satisfactory,"	"Will always be regarded from the patient's point of view as the one remedy for acute rheumatism."		
31	General Infirmary, Leeds	Mr. Walter Brown	"	"Relief of pain complete"			
32	General Infirmary, Gloucester	Prof. de Chau-	"	"Reduces tem-			
33	Netley Hospital	mont	"	perature and di-			
				minishes pain			
				and swelling"			
				"An efficient			
				remedy"			
				"Satisfactory"			
34	Edinburgh Infirmary	Dr. Muirhead	Salicin and salicylates	"Invariably satis-			
35	Glasgow Royal Infirmary	Prof. Charteris	Salicin	factory"	"Preference is given to salicin over the salicylates. I took up the treatment septically, but was soon convinced of its manifest advantages."		
36	Glasgow Western Infirmary	Prof. Gardner	Salicin	"Very satisfactory"	"Have always favoured salicin as <i>versus</i> salicylates. Have not found it produce any unfavourable symptoms."		
37	Aberdeen Infirmary	Prof. Smith-Shand	Alkalies, quinine, salicin	Not noted	"Have of late seldom prescribed salicylate of soda, on account of the disagreeable symptoms it so frequently produces."		
38	Dundee Infirmary	Dr. Maclagan	Salicin and salicylate	"Very satisfactory"	"Salicylates often caused gastric and cerebral disturbance; salicin produced no unfavourable results, and was equally potent."		
39	Belfast Hospital	House-Surgeon	Salicylic acid and salicylate of soda	"Very great ad-			
				vantage"			

"... regards the remedy as an all powerful one."

essential to the rheumatic process is inflammation of the fibrous textures of the joints. This is the characteristic feature of the disease—it is the arrest of this which is essential to its cure,—and it is their power of arresting this that distinguishes the salicyl compounds, and imparts to them their remarkable therapeutic properties. All observers are agreed that relief of pain and alleviation of the local symptoms of acute rheumatism precede fall of temperature under the salicyl treatment. Were the curative effects of the salicyl compounds dependent on their anti-pyretic action the reverse would be the case, the fever would be allayed first and the rheumatic symptoms would decline later. A remedy which brings down febrile temperature would not suffice to arrest inflammation of the fibrous textures and all the symptoms dependent thereon. A remedy which arrests this inflammation would suffice to arrest the whole course of the disease. This is what the salicyl compounds do: they put a stop to the inflammation of the fibrous textures and all the symptoms, local and general, to which that inflammation gives rise. Such an action is more fitly described as anti-rheumatic than anti-pyretic, for the febrile disturbance is secondary to the local inflammation, and not the local inflammation to the febrile disturbance.

An intelligent appreciation of the mode in which the salicyl compounds arrest the rheumatic process, presupposes a knowledge of the nature and mode of production of that process. I have recently given to the profession my views of the pathology of rheumatism, and shall not enter on them now. I make this brief reference to the subject in order that the Society may understand what I have to say regarding the manner in which the salicyl compounds produce their anti-rheumatic effects.

Acute rheumatism I regard as a malarial fever; the rheumatic poison I regard as a malaria; and malaria I believe to consist of (and all recent research tends to confirm this view) minute organisms. The symptoms of acute rheumatism I regard as the result of the action of this special organism on the system. The local joint and heart affection are the result of the action of these organisms on the fibrous textures of the joints and heart. The salicyl compounds produce their anti-rheumatic effects not in virtue of any special action which they exercise on the system, but solely in virtue of their destructive action on this organism: they arrest the rheumatic process not by acting directly on the affected tissues, but by destroying the poison which causes disturbance in these tissues. During

the course of this action the physiological effects of the salicyl compounds—that is, the evidences of their action on the system—are frequently manifested; but these effects, so far from being looked upon as essential, are observed with regret; we do not wish them, and are very sorry when they appear; but if it were their full action on the system that we wanted, we would give them till we did produce these effects, and would give them with that object. That we get the full curative effects of this drug in the majority of cases without its physiological effects, is evidence that it is on the rheumatic poison that they act, and not on the system.

This leads to the second point—their mode of administration. All evidence shows what, from the time that I first introduced this mode of treating acute rheumatism I have all along persistently maintained, that to get their full beneficial action the salicyl compounds must be given in full and frequently repeated doses. The view which I advocate as the mode of production of the rheumatic process, and as to the mode of action of the salicyl compounds, shows why this should be. The object in view is the destruction of the rheumatic poison. This object is attained by administering the salicyl compounds. The larger the quantity that can be thrown into the system in a given time, the more rapid will be the destruction of that poison. The salicyl compounds are very rapidly eliminated from the system, hence the necessity for giving them frequently as well as in full dose. What is wanted is the presence for some time in the blood of as much of this anti-rheumatic agency as can well be borne.

An important part of the question of the mode of administration of the salicyl compounds is, Which of these compounds is best borne by the system? Salicin and salicylic acid, be it borne in mind, are only two of a numerous series of salicyl compounds, all of which may be possessed of anti-rheumatic properties. From observations made with saligenin and salicylous acid I feel sure that they are anti-rheumatic. Practically we have to deal only with salicin and salicylic acid (generally given as salicylate). Salicylate of soda is most used; but no one who has used it much can have failed to notice its deleterious effects on the system. Many instances have been recorded, and their number is being swelled in almost every journal that we read, in which more or less disastrous effects have been produced by it—delirium, insanity, prostration of the vital powers, syncope, and even death. Salicin

is equally powerful as an anti-rheumatic, but it produces none of the deleterious effects of the salicylates. In several cases, some of which I have recorded, I have given full doses of salicin to patients suffering from the depressing and disturbing action of salicylate of soda; and under its use (though, of course, not in consequence of it) the depressing effects of the salicylate have disappeared.

In the statistics which I have laid before the Society to-night it will be seen that salicin is used in eleven of the thirty-nine hospitals named; in two of the eleven it is used to the exclusion of the salicylates. While the salicylates are frequently said to produce bad effects, not a single reference is made to any bad effects following salicin. In most cases the deleterious effects of the salicylates pass off with the omission of the drug; but to have to omit it is a serious drawback, for its early omission is most likely to be followed by a renewal of the rheumatic symptoms.

Whether or not the salicyl treatment of acute rheumatism diminishes the frequency and danger of heart complications, is a point on which I have not time to enter. I believe that to some extent it does. But I believe also that when these occur the treatment by salicylate of soda occasionally increases the patient's danger. I refer specially to those cases, more numerous than is usually supposed, in which the muscular substance of the heart is the seat of inflammation. Myocarditis has for its pathological condition thickening, softening, and enfeeblement of the muscular walls, chiefly those of the left ventricle. If to this enfeeblement is added that which sometimes follows the administration of salicylate of soda, the patient's condition is thereby rendered more serious, and the continued administration of the salicylate might turn the scale against him.

One word on relapses. These are generally said to be more frequent under the salicyl than any other form of treatment, though Dr. Owen's statistics would seem to indicate that this is more apparent than real, and may be a mere result of more attentive observation. There is no doubt that the salicyl treatment has to be kept up for some time after the symptoms have abated, and that their too early omission is apt to be followed by a return of the symptoms. But the term relapse as applied to acute rheumatism I believe to be pathologically erroneous. Dr. Southey has divided cases of rheumatic fever into the continued and the relapsing. But rheumatic fever never is a continued fever as that term is usually

applied in medicine ; it never goes through a continuous and regular course, but varies extremely in different cases both in course and duration, and in its progress from day to day. It is really a remittent fever, while the milder and subacute cases are intermittent in nature, and many of the so-called relapses are but the natural intermissions of the disease, which occurred even more frequently under the alkaline than under the salicyl treatment, as Dr. Owen's statistics have shown us. The knowledge that the symptoms are apt to recur is a reason for going on with the salicyl treatment till all danger of an intermission is over.

Hyperpyrexia is no essential part of the rheumatic process. It is one of its rarer complications, and is to be regarded as peculiar to the individual in whom it occurs, rather than as essentially pertaining to acute rheumatism. All evidence shows that it is not at all benefited by the salicyl compounds. They are quite inoperative in it. The external application of cold is the remedy for this condition.

Dr. DOUGLAS POWELL said :—Following upon the able and fair-minded paper with which Dr. Hilton Fagge opened this discussion as to the value of the salicyl preparations in the treatment of acute rheumatism, we have now had valuable statistical papers representing the experience of the chief London hospitals, and as far as statistics drawn from hospital records can help us we are in a fair position to discuss the merits of these drugs. I must confess myself disappointed that we have as yet had no records of private practice, for I think that many of the Fellows of this Society in large family practice might have given us most useful experience. Hospital records are greatly diminished in value with regard to a question like that of the salicyl treatment of rheumatism by the facts that, first, in a large proportion of the cases that come before us the attack is not a primary, but a second or a third attack, and it is probable that a considerable number of the cases tabulated should be regarded as *separate attacks* rather than separate cases. Thus, out of the 32 cases that I have treated in my wards at Middlesex Hospital since January, 1881, in 15 only was the attack a primary one, in 17 cases the patients having suffered one or more previous attacks. Then, secondly, hospital patients have been ill for some days before coming under our treatment, and have been meanwhile subjected to various treatments, or have suffered from

exposure and neglect of treatment. Thus, of the 32 above quoted cases, only 1 was admitted on the first day of illness, and that was for a second attack, the mean duration of illness before admission being eight and three quarter days for men, and eight days for women. And, thirdly, a point to which I shall presently again refer, a large proportion of the cases both in primary and secondary attacks have already heart complication when admitted. This was the case in 7 out of the 15 admitted with primary rheumatism, and in 12 out of 17 admitted with second or third attacks. Turning now to the question of frequency of relapse in cases under salicyl treatment, compared with those under other treatments, I would venture to say that this is, after all, in great measure what in finance phrase might be called a matter of account. It depends upon what we accept as evidence of subsidence of the disease. It has not been within my own experience to meet with many cases of acute rheumatism that I could regard as convalescent by the fifth day, and I would question whether the cases placed to the account of relapses are fairly so placed. Thus, of Dr. Fagge's 355 cases under salicyl treatment, one-half subsided within five days, of which one-fourth relapsed; another one-fourth subsided between the fifth and twelfth day, one-third of which relapsed; and one-eighth subsided between the twelfth and thirtieth day, of which one-third relapsed. Taking the 350 cases tabulated by Dr. Donald Hood as treated by other than salicyl drugs, one-sixth subsided within five days, of which one-eighth relapsed; one-third subsided between the fifth and twelfth day of which one-twentieth only relapsed, and two-fifths subsided between the twelfth and thirtieth day, and one-twenty-eighth only relapsed. So far as these figures go they would seem to show that although the salicyl compounds are more immediately efficacious in neutralising the activity of the rheumatic poison, yet they do not eradicate it or influence the process of its manufacture as do other drugs, and especially, perhaps, the alkalies. Dr. Greenhow's cases, collected under more stringent conditions, nevertheless give almost identical results as regards subsidence of pain and fever, and frequency of relapse. But glancing through my own 32 cases, collected within the past year, in only seven instances could I regard the disease as having subsided by the fifth day, these cases being retained in hospital nineteen, forty-five (relapse thirteenth day), twenty-one, fourteen, sixteen, seventeen, and seventeen days (slight relapse of pain) respectively, and giving

two cases of relapse; but even in these cases by "subsidence" of active symptoms I do not at all infer cessation of disease. The mean period of convalescence was the fifteenth day for the men (excluding one case of indefinite character), and the twelfth day for the women (excluding two indefinite and one of sixty-six days), the mean periods of stay in hospital being thirty-four days and twenty-eight days, with same exceptions, and the total relapses in the 32 cases being six.

It must, I think, be admitted that joint inflammation and pyrexia do not include the essential features of acute rheumatism any more than pyrexia and diarrhoea do those of enteric fever; and that under whatever plan of treatment adopted the disease still exists (the poison being perhaps still manufactured within the body) so long as the tongue remains coated and the secretions disordered. So long as these latter symptoms continue will "relapse" follow upon any exposure, exercise, or improved diet. The successful treatment of rheumatism is one of many details, and the danger of accepting abatement of pain and fever as evidence of termination of the disease lies in this, that precautions are relaxed both on the part of the patient and his attendants.

I fear that as regards heart disease as the criterion by which to estimate the value of any treatment for rheumatism, hospital statistics are of little value. I believe my own cases are not exceptional, and I have pointed out that their admission was, on the average, on the eighth day, and that in 19 out of the 32 cases heart disease already existed. In 3 of the remaining cases slight cardiac complication arose during treatment, and in 3 cases (2 others doubtful) fresh cardiac complication supervened upon present heart disease. My impression of salicyl treatment with regard to prevention and treatment of heart complication is, on the whole, favorable, but I cannot put it more strongly.

I have only met with toxic symptoms in the form of delirium or mania in three instances, and as all my cases were treated with salicylate of soda, I think this shows that the complication was not due to impurity of preparation. The only case in which I made special examination of the urine showed that elimination of the drug was not completed until the latter part of the fifth day instead of within forty-eight hours, as I found the rule in other cases.

The only 2 cases of hyperpyrexia in acute rheumatism with which I have met have been in private practice. The first case was that

of a lady in 1876, with an apparently mild second attack of rheumatism and with aortic disease of old date. The pains and temperature rapidly subsided under twenty-grain doses of salicylate of soda given every four hours; but whilst the patient was still deafened from the drug the temperature rapidly rose, and she died suddenly when it reached  $107^{\circ}$ , before a bath could be prepared. The second case was that of a tradesman seen in consultation with Dr. Spurgin, in which hyperpyrexia set in with delirium, proceeding to complete insensibility whilst the patient was still taking the salicylate in twenty-grain doses. I saw the case when the temperature was at  $107^{\circ}$ , and before a bath could be prepared it had nearly reached  $108^{\circ}$ ; by the addition of large lumps of ice to the bath the temperature was in an hour reduced to  $100^{\circ}$ , the patient restored to comfort and consciousness. He died three days later, probably from some pulmonary complication. In this case I did not recognise any heart disease or pericarditis, but in neither case was there any post-mortem examination.

The value of salicyl compounds in the treatment of rheumatism is well shown in cases outside the ordinary run of acute rheumatism, in which joint symptoms are absent or insignificant, and the disease manifests itself in other unlooked-for ways.

CASE 1.—A fair-haired, well-developed girl, was admitted into Middlesex Hospital on May 25th, 1881, with symptoms and signs which led me emphatically to the diagnosis of acute phthisis (*phthisie galante*). The father had died of phthisis. She had suffered from cough since catching cold five months previously. There were pleuritic pains in the right side, and she was expectorating freely and sweating much at night. The physical signs showed slight dulness and moist crackle below the left clavicle, with blowing breath sound and crackle behind, and diffused crepititation throughout that side posteriorly. At the right apex the breath sounds were harsh, but there were no moist sounds. Temperature  $101.6^{\circ}$ , pulse 124, respiration 40. On the third day after admission, the temperature having ranged  $99.8^{\circ}$  and  $101^{\circ}$  in the morning and  $100.8^{\circ}$  in the evening, there were scattered sibilant râles on the right side also, and at the apex some moist crackle increased after cough. The tongue was thickly coated, the sweatings were marked and not limited to the night, and the patient complained much of pains in the limbs, chiefly in the bones (no nodular swellings). The left ankle, or rather instep, was somewhat swollen. There was no history of rheumatism; but having regard to certain rheumatic symptoms in the Case, I, on the third day after admission, placed her upon fifteen-grain doses of salicylate of soda every four hours. That evening the temperature fell to  $98.8^{\circ}$ , but rose again, and continued high, with irregular remissions, until the sixth day following, when it remained, with a few exceptions,  $98.8^{\circ}$  to  $99.8^{\circ}$ . The improvement in other symptoms was most striking; the tongue slowly cleaned, the

cough abated, the pulmonary signs cleared up, and the patient rapidly gained weight. On June 6th the salicylate was given three times a day, and she took this alone, with an occasional aperient, until the 13th, when two drachms of cod-liver oil twice a day were added. On the 27th and 30th rheumatic pains appeared again in the right ankle, and also in the right wrist. Evening temperature 100°, pulse 80. The salicylate was given every six hours. The patient left the hospital on July 5th, and passed into the Brompton Hospital, still under my observation. At this date there was slight flattening below the left clavicle, with defective percussion, harshness of breath sound, and slight crackle after cough. In the scapular region was some bronchial quality of respiration and spongy crepitus, with increased conduction of voice. There was some cough during the day, but no expectoration, and no night sweats. The tongue was clean. The pulmonary symptoms remained in abeyance during her stay of three months in the Brompton Hospital. She occasionally had slight relapses of rheumatism, but still improved in flesh and general appearance.

CASE 2.—A man, st. 33, admitted October 10th, 1881, with history of having been taken suddenly ill in the street three days previously in a manner he could not describe. He managed to get home; and next day complained of severe pains in the head and along the upper spine; was delirious. The neck was now for the first time observed to be stiff, and arched backwards; and he suffered from violent retching. On admission the temperature was 101·2°, pulse 62, full and strong; pain intense in head and upper cervical regions. Head thrown back, and any attempt to bring the chin down causes spasmodic twitchings of the posterior cervical muscles. Pupils equal and active; tongue thickly coated. Patient only semi-conscious; quickly relapsing into unconsciousness when roused. No eruption of any kind; abdomen retracted. Evening temperature 102°. Patient difficult to manage; will not keep ice coil applied. The treatment consisted at first of aperient enemata and four grains of iodide of potassium with twenty grains of bromide every three hours; but consciousness diminished. On the second day the patient lay on right side with head thrown back and body curled up; all limbs flexed, and resisting extension; temperature 102°. Under these circumstances, and learning from an intimate friend that he had had rheumatic fever twice, and had recently suffered severe pains on one side of the head and face, it was thought well worth while to try salicylate of soda in twenty-grain doses with the bromide every four hours, the patient's strength being maintained by enemata. The patient picked bedclothes and passed excretions under him during that night. On the third day the temperature was 100·2°, pulse 112; he became coherent. Towards evening the pains in the head diminished, and slight movement forward was possible. On the following day the temperature fell to 100°, and on the fourth day of treatment to 98·6°. The tongue gradually cleared, the temperature remained low, and pain rapidly subsided. On the thirteenth day the salicylate was given in ten-grain doses, with a little iron three times a day, and cod-liver oil twice a day. On the twenty-fourth day the patient went to Seaford, and returned quite well. Subsequent inquiries which I made respecting his former illness left me in no doubt that his previous attack of pain in the head, which lasted three months, was rheumatic neuralgia, for which he had been treated by tonics.

These two cases are the most striking examples I have met with, but

I have seen a goodly number of cases of other than joint rheumatism in which the salicylates have proved of value when other measures failed.

Dr. GILBERT SMITH spoke as follows:—The important statistical evidence, together with the conclusions deduced therefrom, which have been laid before the Society during the course of this discussion have prominently displayed many interesting features illustrative of the value of the salicyl compounds in the treatment of acute rheumatism. Ample proof has been given by the various speakers in the debate of the power possessed by the remedy to reduce temperature, to subdue pain, and to diminish and prevent arthritic inflammation. But while it has been ably demonstrated by incontestable evidence how successful are the salicylates in changing the aspect of the disease so far as the symptoms and comfort of the patient are concerned, it has not been shown that the stay in bed is materially shortened or convalescence hastened; and relapses, in place of being prevented, are more frequent. So long, therefore, as these latter points remain as they are, we may ask, notwithstanding the undoubted value of the drug, Do the salicyl compounds cure rheumatic fever, or do they merely prevent certain of its manifestations, arresting them as opium does pain, while the disease itself or its specific virus remains in readiness to demonstrate its activity on the first opportunity? Dr. MacLagan maintains that salicin is anti-rheumatic; that it cures rheumatic fever; and explains its action thus: he says acute rheumatism is a malarial fever, its symptoms being due to the action of minute organisms on the system. He considers that the local joint and heart affections are the result of the action of these organisms on the fibrous textures of the joints and heart, and maintains that the salicyl compounds destroy these malarial organisms. Another view explanatory of the action of the salicylates in the disease is that put forth by Dr. Latham, of Cambridge, in a paper published in the 'Lancet' of January 8th, 1881, in which he adduces strong evidence to prove that salicylic acid in acute rheumatism enters into chemical combination with the antecedents of lactic acid and glucose, to whose presence in the circulation he believes the disease is due, and so prevents their formation, and there is therefore no longer the resulting dilatation of the minute arteries and consequent hyper-oxidation of the muscular tissues producing pyrexia and increased formation of urates, which

are the accompaniments of the disease. He also suggests that the presence of lactic acid and glucose is owing to the inactivity of a coördinating chemical centre. The action of the salicylic compounds in rheumatism seems certainly to favour the lactic acid theory, for the behaviour of the disease under salicylates does not appear to be consistent with the malarial theory of its origin.

It is not my intention, however, to occupy the time of the Society with vague theories on these points; but I would wish to confine my remarks to a definite question, viz. Is there any evidence afforded by hospital statistics to show that the cardiac complications of acute rheumatism have been in any way affected by the introduction of the salicins? The importance of this question is apparent, seeing that the chief element of danger, present and future, in this disease is imparted to it by the great liability that exists to inflammatory processes in and around the heart. And if, as is affirmed, the salicyl compounds actually cure rheumatic fever, we may, I think, reasonably expect that the occurrence of cardiac complications may be mitigated if not altogether prevented; or if such has already taken place, that its progress may be slowed and its perils abated or even arrested. Dr. Hilton Fagge, in the course of his valuable opening remarks, said that he thought it only fair to expect that any remedy which possesses the power of arresting acute rheumatism so that fresh points no longer become affected, must also hinder the development of what is believed to be an analogous morbid process in and around the heart; but in connection with this just expectation we must not forget that the inflamed joint is placed in a position of perfect rest, an advantage impossible for the heart. No doubt the administration of these remedies brings some rest to the organ by largely diminishing the number of its contractions; yet it may be that even such movements as are necessary for carrying on the circulation will be, in certain cases, quite sufficient to maintain a peri- or endo-cardial inflammation.

In considering the value of any method of treating acute rheumatism, the period of the disease at which the heart first becomes affected is of much importance. According to Sir William Gull and Dr. Sutton the tendency is for the heart to become diseased during the first few days of the fever, and should it escape the early days of the disease there is each day a lessening tendency to its implication. With this view daily experience in the wards is in

perfect harmony. It is, therefore, difficult to arrive at any definite conclusion as to the merits of the salicyl compounds in preventing heart disease in acute rheumatism, seeing that in a large majority of cases the patients are admitted with well-marked cardiac signs. However, it is not disputed that a certain amount of cardiac complication is developed after the admission of the patient to hospital, the average duration of symptoms prior to such admission being taken as nine days. Relative to this point the late Dr. Fuller stated that of forty-one cases of pericarditis twenty-two occurred after the fifth day, and six subsequent to the tenth day of the disease. Of 126 cases of endocardial affection fifty-three existed at the date of admission, seventeen were doubtful, and of the fifty-six remaining thirty-five developed after the tenth day—thus showing a fair proportion of cases of cardiac development occurring in hospital. Dr. Dickinson's statistics, showing the value of alkalies in preventing such development, are well-known. But no doubt it is difficult to form a true estimate of the amount of heart mischief thus arising in hospital, and statistics on the matter are exceedingly variable. At the London Hospital the percentages of cardiac development range from 10 to even 30 per cent. Dr. Warner in his figures respecting this, admits that his calculation of 13·3 per cent. is too low. Dr. Herman, when summarising the conclusions drawn from a review of the cases treated in the London Hospital in 1876, states that the number of cases in which the heart became affected after admission was less in those treated by salicin than in those treated otherwise in the proportion of 1 to 1·5, the percentage being in the former 30·1, and in the latter 18·7.

We have therefore a fair number of cases in which we may with reason look for the beneficial effect of anti-rheumatic remedies in preventing or diminishing the occurrence of cardiac trouble. And further, having in view cases which present on, or after, admission well-marked signs of cardiac mischief, whether arising from inflammation or swelling of the fibrous structures, or from some active or passive endocardial change, or from fibrinous deposit upon the valves, it appears only reasonable to presume that a true anti-rheumatic remedy will exert an inhibitory influence on the morbid condition, and will lead to the diminution or disappearance of the abnormal sounds, thus reducing the number of cases leaving the hospital with "persistent bruits" or other signs of confirmed valvular lesion. If the administration of the salicyl compounds, now

so generally adopted in almost every hospital, as shown by Dr. Maclagan, has any such action upon inflammation in and around the heart, then a corresponding effect will doubtless be observed in the statistical returns relative to heart complication in acute rheumatism.

With a view of throwing light, if possible, on this difficult question, I have prepared the following tables, which set forth such statistics on the point as I have been able to obtain:

Table I presents several classic series of cases treated in what may be termed the pre-salicylic era. Out of a total of 1727 cases, 940 were affected with heart disease of some kind, or 54·0 per cent. On withdrawing Dr. Basham's cases, whose figures suggest some error, the percentage will be 56·0.

Table II tabulates cases treated at the hospitals named therein subsequent to the introduction of the salicyl compounds. Although all these cases here given were not treated by these remedies, yet the majority were, and in so large a number there is ample room for the beneficial influence of the drug to manifest itself if such influence exists. In this table it will be seen that out of 1748 cases 1109 presented heart complication, or 63·4 per cent., as against 54 per cent. (or 56·0) in the previous table.

Table III shows the amount of cardiac complication in cases of primary attacks of the disease, and here we should anticipate a lower percentage, for in such there is less likelihood of interference from previous cardiac lesion. According to Dr. Barclay, heart affection occurs 18 to 20 per cent. more frequently in subsequent than in primary attacks. Among the 246 cases recorded by Dr. Fuller recent heart disease was found in 41·8 per cent. of first, and in 55·8 of subsequent attacks. In this table, contrary to our expectations, in 381 cases out of 629 the heart was affected, or 60·5 per cent.

Table IV gives similar statistics of 533 cases treated by the salicyl compounds alone, and it also exhibits the highest percentage of cardiac complication—viz. 68·4.

In comparing these statistics, it may reasonably be presumed that whatever errors there may be (and doubtless there are many) in the method employed to determine the existence or not of cardiac disease, such errors are common to all, seeing that these figures represent in each series of cases numerous observers. The incomplete condition of the column showing the seat of the cardiac lesion

TABLE I.—*Statistics showing the Proportion of Cardiac Complication in Acute Rheumatism previous to the Introduction of its Treatment by the Salicyl Compounds.*

Authorities.	Year.	Hospital.	Noes.	Females.	Total.	Percarditis.	Endocarditis.	Pari- and endocarditis. <sup>*</sup>	Serous or fibrillar pericarditis.	Heart affected in doublets.	Heart affected in triplets.	Deafness.	Percentages of deafness due to rheumatism.	Other cases of deafness in relation to treatment.
Dr. Latham	1836-40	St. Bartholomew's	75	61	136	7	63	11	9	90	46	3	661	1·5
Dr. Basham	1846-48	Westminster	68	21	79	8	6	4	—	18	61	3	227†	4·3
Dr. Barclay	1850	St. George's	76	76	152	(?)	(?)	(P)	21	88	64	8	678	1·7
Mr. G. F. Bury	1853-59	Middlesex	256	220	476	35	138	80	—	253	223	(?)	531	1·8
Dr. Garrod	1852-55	University	20	31	51	6	15	4	3	28	23	(?)	54·9	1·8
Dr. Fuller	1858	St. George's	131	115	246	12	76	27	31	145	101	(?)	58·9	1·7
Dr. Sutton	1861-64	Guy's	22	19	41	6	22	(P)	2	30	11	(?)	73·1	1·3
Dr. Peacock	1846-68	St. Thomas's	78	68	146	(P)	37	16	—	62	84	2	42·4	2·3
Dr. Pye-Smith	1870-72	Guy's	223	177	400	79	97	17	34	227	173	(?)	56·7	1·7
		Total . .	939	788	1727	(P)	(P)	(P)	(P)	941	786	(?)	540	1·83

\* By endocarditis is meant any acute or chronic change in the endocardium, including valvular disease.

† If we abstract Dr. Basham's cases, with their exceedingly low percentage, it will still leave the percentage of the remainder at 56·8.

TABLE II.—Statistics showing the Proportion of Cardiac Complication in Acute Rheumatism subsequent to the Introduction of its Treatment by Salicyl Compounds.

Hospital.	Year.	Males.	Females.	Total	Per cent.	Per cent. of heart disease doublets.	Seal of disease.	Heart affected	Heart extreme	Deaths.	One case in each of heart disease developed in hospital.
London	1876	94	66	160	21	(P)	(P)	—	126	34	3
"	1877	127	72	199	(P)	(P)	(P)	—	134	65	4
"	1878	67	68	135	4	(P)	(P)	—	73	62	(P)
"	1880	136	108	244	2	113	7	—	147	97	4
Guy's.	1879-80	306	218	524	60	268	37	—	395	169	(P)
Middlesex	1878	47	61	98	8	35	19	14	57	41	1
"	1879	43	54	97	1	59	7	—	60	37	1
St. George's	1877-79	140	161	291	6	135	6	—	147	144	1
Total	•	980	788	1748	(P)	(P)	(P)	(P)	1109	639	(P)
										63·4	1·57

\* By endocarditis is meant any acute or chronic change in the endocardium, including valvular disease.

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\* By endocarditis is meant any acute or chronic change in the endocardium, including valvular disease.

TABLE II.—Statistics showing the Proportion of Cardiac Complication in Acute Rheumatism subsequent to the Introduction of its Treatment by Salicyl Compounds.

Hospital.	Year.	Males.	Females.	Total	Percarditis.	Pericarditis and endocarditis.	Heart disease doublet.	Heart disease in singlet.	Deaths.	Percentage of heart disease developed in hospital.	
London	1876	94	66	160	21	(P)	(P)	—	126	34	8
"	1877	137	73	100	(P)	(P)	(P)	—	184	65	4
"	1878	67	68	135	4	(P)	(P)	—	78	62	(P)
"	1880	186	103	284	2	113	7	—	147	97	4
Guy's	1876-80	303	212	515	60	264	37	—	315	160	(P)
Middlesex	1878	47	51	98	8	85	10	14	67	41	1
"	1879	43	64	97	1	60	7	—	60	17	1
St. George's	1877-79	140	161	301	0	145	0	—	147	141	1
Total	1880	788	744	1732	(P)	(P)	(P)	1100	610	(P)	614
											167

\* By endocarditis is meant any acute or chronic change in the endocardium, including valvular disease.

heart complications had occasionally supervened. He would be glad, if he could, to say that salicylic acid had had a beneficial influence in the warding off or curing heart affections ; but he was reluctantly compelled to admit that he was doubtful of its possessing such an efficacy. He was in the habit of prescribing the drug with bicarbonate of potash.

Mr. MILLICAN (Kineton) gave a brief account of six cases which he had treated in private practice.—Case 1 : Salicylic acid. Subsidence of pain and fever on fifth day. No cardiac complications ; no relapse.—Case 2 : Salicylate of soda. Subsidence of pain and fever on the fourth day. The third attack with previous heart complications. A relapse occurred owing to indiscretion, but was speedily subdued.—Case 3 : Salicylate of soda. No subsidence of pain or fever for five weeks. Complicated with struma. No cardiac mischief.—Case 4 : Salicylate of soda. Patient suffered from haemoptysis previously, as vicarious menstruation. Salicylate produced purpura and haematuria, and removal of pain from joints to loins. Salicylate of iron speedily subdued pain and fever without further renal complications.—Case 5 : Salicylate of quinine developed albuminuria. Duration short, about six days. Cardiac complication. Case 6 : Salicylate of soda. Developed albuminuria, which disappeared on cessation of remedy, to reappear on its resumption. Substituted bicarbonate of potash. Duration of fever four weeks ; no cardiac complications.

Dr. BROADBENT spoke as follows :

It remains for me to give the statistics—comparatively small statistics—which I have to lay before the Society, and then briefly to sum up what seems to me to have been the general outcome of this most interesting and valuable discussion.

The first case which I treated by salicylic acid was in February, 1870—one of the earliest cases, I think, next to those of Dr. Maclagan, in this country. I have from that time records of ninety cases treated by salicyl compounds, mainly salicylate of soda. I am unable to give the precise duration of pain and fever, as has been done by many of my predecessors in this discussion. I can only say that my experience coincides closely—I may say, exactly—with that of many observers who maintain that after the administration of salicylic compounds in acute rheumatism the pain subsides with

extreme rapidity, and the fever also; and that, whatever the ultimate results may be, the immediate relief afforded is most striking.

The average duration of stay in hospital in these cases was amongst the males 32·2 days, and amongst the females 30·25 days; but these figures take cognisance of cases which were under treatment for 69, 67, 60, 57, 63, and 51 days, and of a few similar periods where the salicylate was given for only a short time at the very commencement of the attack. In my experience, where the salicylate fails to influence the disease at once, there is very little to be hoped from a continuance of its administration. The cases of relapse have been fifteen in number, and in four of these fifteen there were two relapses.

As regards cardiac complications I cannot contribute very much information. Taking all my cases together there would be about the usual proportion of such complications, but very early in my experience I recognised the fact that salicylic acid or the salicyl compounds had no influence whatever upon the course certainly of pericarditis, and a very small influence upon the course of endocarditis, and that not only was the lesion itself—the inflammatory cardiac lesion—unaffected, but when one had to deal with cardiac inflammations the fever failed to subside under the salicylates. Indeed, the only case of hyperpyrexia I have seen under the influence of salicylic acid was in a patient with pericarditis; that condition was recognised when the temperature was 107° F., the cold bath was then resorted to, and the patient's life was saved. The moment I recognise any cardiac inflammation I discontinue the administration of salicylic compounds, and several times it has happened to me, on coming into the hospital, to find that the salicylates have been prescribed in a case of acute rheumatism, and to recognise from the persistence of a comparatively high temperature in spite of the drug, the imminence and the probable existence of pericarditis or endocarditis, which had not been revealed by any physical sign, and to have that surmise confirmed. I ought to add that in endocarditis the resistance to the effects on temperature of the salicyl compounds is not so marked as in pericarditis. I should think, judging from my own experience, that in many of the cases in which the temperature persists after the alleviation of pain this is due really to the existence of endocarditis, which of course has been recognised, though it has not been shown in the tables laid before us. With regard to cardiac weakness left behind as the

result of the administration of salicylic compounds, that is unknown to me as a permanent affection, but what I have seen more than once has been that, when a very high temperature has rapidly gone down under the influence of salicylic compounds, the pulse has not only been infrequent but very weak. This, however, is exactly what happens after the defervescence of relapsing fever, in which it is almost constant, and what we sometimes see in the defervescence after a crisis in pneumonia. I attribute, therefore, the temporary weakness of the heart's action not to the effect of the salicylates, but to the sudden and rapid fall of temperature. Very little has been said as to the mode of administration of the remedy, which is, in my opinion, a matter of considerable importance. The quantity of salicylic acid I have usually given is twenty grains, in combination with soda, every hour for six hours, and this is repeated on the second day. The further administration of the salicylic compounds has been the same dose, perhaps, three times a day, or, if the temperature is not absolutely gone down, as is the rule, this dose is given four times per diem for some days afterwards.

Notwithstanding this rapid administration of the drug, which I myself am decidedly of opinion is the best, I have seen comparatively few really unfavorable symptoms attributable to its action. In only three cases was there serious delirium, in one there was strangeness of manner and sullenness, and in three giddiness, and in five decided deafness. Where there have been very marked toxic symptoms I am very greatly inclined to believe, indeed it has been demonstrated in many cases, that there has been some impurity in the drug. I think that the Society is greatly indebted to Dr. Fowler, of Cambridge, for his kindness in coming here to state the experience he has had in the use of the drug prepared directly from wintergreen, and not from sources whence come carabolic acid and other similar compounds which might have dangerous effects.

This, then, is what I have to contribute as the result of my personal experience, and I have now, further, only to congratulate the Society on the extremely interesting and valuable information which has been placed before it. I have not been able to determine exactly the numbers upon which the conclusions have been founded, because the tabular statements have overlapped in some degree, but certainly more than a thousand cases of rheumatic fever treated by salicyl compounds have been under the consideration of the

different speakers who have brought the matter before the Society, and any one of these papers would have gone far to place the salicylic acid treatment of rheumatic fever in its true light. If facts can settle a question, then I consider that the value of the salicylic treatment of rheumatic fever may be considered as settled. We have, I think, had the subject statistically treated from every possible point of view. Each evening the walls of this room have been covered with elaborate tables, which have conveyed information of extreme importance and interest. In all respects singularly good fortune has attended the efforts of the Society to deal with this question, not the least of our grounds for self-gratulation being that the introduction of the subject was undertaken by Dr. Fagge. It was not only by the large array of facts which he set before us, and by the lucid manner in which the conclusions deducible from these facts were brought out, but also by his preliminary remarks as to the method of dealing with the subject, and as to the difficulties surrounding it, that he laid us under special obligation. Every subsequent paper must, I think, really gain in value from being read in the light of those preliminary remarks.

With respect to other papers, we have had, on the one hand, the personal experience of Dr. de Havilland Hall, of Dr. Coupland, and this evening of Dr. Douglas Powell; on the other hand, the statistics drawn from hospital records by Dr. Isambard Owen, Dr. Warner, and Dr. Donald Hood. Now, however an individual might have been led away by preconceived notions, there is no reason why those who follow and who look only at the results should be so led away, and it is remarkable how the consensus of opinion tends in one direction; and I hold that the questions which I ventured to hope might receive some sort of answer by means of this discussion are really effectually answered, although perhaps no one has specially addressed himself to them. The answers may not have been direct, but they have been for that very reason all the more conclusive. I think we may say definitely that by means of salicylic compounds the duration of the pain and fever in rheumatism is unmistakably lessened; and, even if the stay in hospital is not materially shortened, certainly the suffering is very greatly diminished. With regard to relapses, perhaps we may say that they seem to be more common under the new than under the old methods of treatment; still I am quite sure that the explanation of this is to be found in the rapidity with which all the acute sym-

ptoms subside under the administration of salicylates. You cannot in these circumstances get the patients to be so careful of themselves as when they have gone through the terrible sufferings of an unalleviated attack of acute rheumatism. You cannot make sure that even the nurses will be as careful as they should be. Over and over again I have gone to the bedside of a patient, who has just come out of acute rheumatism, and have found a stream of air pouring down upon the bed, in consequence of the zeal of sisters and nurses for ventilation; and to this fact I am quite certain that many relapses are due. Dr. Powell's remark that the relapses are "a question of account," is, I believe, to some extent a perfectly true one; but in a considerable number of cases we find the temperature going down, and the pain departing, at the end of a very few days, and once for all. Whether we date the cure from the time of the subsidence of pain and high temperature, or later on, is of no great consequence, and I think Dr. Powell himself, while hesitating to say that salicylates cure rheumatism, has brought forward the strongest evidence that he possibly could in proof of this point. The cases of acute catarrhal pneumonia and cerebro-spinal meningitis which have been "cured"—and I think we may use the term—I consider exemplify and emphasise the actual cure of an acute rheumatic attack, also the positive antagonising of the rheumatic disease, be the cause poison in the blood, a condition of the nervous system, or what it may. I am not aware that there have been brought forward any illustrations of bad effects which at all neutralise the good results that we have seen. I should like to ask Dr. Powell—I am afraid we shall not be able to call upon him again in this discussion, but when, as is hoped, these cases are published *in extenso*—to answer the question whether in his cases of hyperpyrexia there were not cardiac complications. These make an extraordinary difference in the action of salicylic compounds. It is within my own experience that the temperature in some cases not only does not fall, but tends to rise, when we have acute pericarditis treated with salicylic compounds.

A question which we have not been able to resolve—indeed I do not know that the material exists for its determination—is the relative advantages of the different salicyl compounds. It seems to me that the natural salicylic acid, as being less liable to contamination than the samples made from coal-tar compounds, is preferable to the latter; and it is a matter for inquiry which no doubt will be

submitted to the test of experience, and which certainly I for one shall endeavour to elucidate, whether salicin has the advantages over salicylic acid claimed for it, and possibly with good reason, by Dr. MacLAGAN. I have not yet alluded to Dr. MacLAGAN's valuable contributions to the discussion, in which we have his own personal experience and the general statement of results of the salicyl treatment from a large number of hospitals.

Turning now to another part of the subject, I myself do not—in spite of those most interesting, and of course accurate, tables which have been brought before us by Dr. Gilbart Smith,—believe that the salicylates increase the frequency of heart disease; on the contrary, I quite coincide with the hope and anticipation expressed by Dr. Fagge, in the early part of the discussion, that when salicylates are brought to bear upon the fever in the first days of its existence we shall see a notable diminution in the heart disease; for in my own experience, during the whole administration of salicylates, it has been exceedingly rare to see heart disease springing up.

One question there is which has been very little dwelt upon—viz. the *modus operandi* of the remedy. I dislike very much the terms “anti-rheumatic” and “anti-pyretic,” and indeed all terms beginning with “anti;” but in my earlier remarks I was compelled to use them for the sake of brevity. A matter of great moment, however, is the way in which salicylic compounds act—whether they bring down the pain because they abate the fever, or whether they bring down the fever because they destroy the cause of the pain. My own very strong opinion is, that it is not merely as dealing with fever that the salicylic compounds act. They have little influence over pyrexia due to other causes than rheumatism. In relieving the fever of typhoid, for example, they are not to be compared with quinine; and, indeed, my own experience of the salicylates in enteric fever has not been favorable. It appears to me that in some way or other the salicyl compounds antagonise the disease rheumatism, whatever it may be.

I will not enter now upon the discussion of the various hypotheses which have been advanced as to the nature and cause of rheumatism—that of Dr. MacLAGAN for instance, or that of Dr. Latham. I must, however, express my dissent from Dr. MacLAGAN's theory, of its malarial origin and bacterial cause, which does not seem to fit in with all the facts in the history of acute rheumatism. Again, I cannot accept the existence of the special chemical coördinating

centre of Dr. Latham, and therefore I am unable to receive his conclusions drawn therefrom. In saying this I do not mean to imply that I deny to the nervous system any share in the production of rheumatic fever. I object simply to the establishment of another of those centres which are postulated for anything of which we want an explanation.

Dr. FAGGE briefly replied, and the Society adjourned.

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THE LETTSOMIAN LECTURES  
were delivered by

Mr. HUTCHINSON ROYES BELL, F.R.C.S.,  
as follows :

1ST LECTURE.

January 9th —On the Varieties and Treatment of Hydrocele.

2ND LECTURE.

January 23rd.—On the Anatomy of the Testicle.

3RD LECTURE.

February 6th.—On Acute and Chronic Orchitis.

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*January 30th.*

Dr. Broadbent read the post-mortem notes of the case of paralysis of the seventh, eighth, and ninth cranial nerves, which he had shown on October 31st (see p. 12).

THE HOSPITAL AND ACCIDENT AMBULANCE  
SERVICE FOR LONDON.\*

By BENJAMIN HOWARD, A.M., M.D., F.R.C.S.E.

Dr. Howard, after glancing at some general reasons for an ambulance system, showed the pre-eminent force of these and other

\* Published *in extenso* in 'Lancet,' Feb. 4th, 1882.

reasons when applied to London. A description of the various modifications and systems was given, as carried out in different cities in America. This was followed by an account of the system of the London Hospital, as submitted by him to its Committee, the working of which was illustrated by diagrams.

Dr. Howard then gave a comprehensive analysis of the various questions likely to arise, and difficulties to be surmounted in the establishment of an ambulance system in London.

He showed by diagrams how, without waiting for a fully completed organisation—if certain hospitals would only do for their respective districts what the London Hospital was doing for its district—in a simple and easy manner a large area would be quickly provided for. The accumulated experience of the respective districts would, perhaps, be the best material from which, by natural growth and development, should arise a completely organised Metropolitan Hospital and Accident Ambulance system.

As the public meeting to be presided over by the Duke of Cambridge was to take place within a few days Dr. Howard had thought it due to the Society, which so largely represents the profession of the entire metropolis, that the whole scheme be submitted to its members for their consideration in advance.

The ambulance carriage recently built from his designs, specially adapted for the London service, and now the property of the London Hospital, was on exhibition, and both in its design and its working at varying speeds elicited unqualified commendation from all the members.

Mr. GANT thought it would be premature, if not impossible, to decide upon the manner in which the proposed scheme should be carried out; but it could only be done by combined effort on the part of all the authorities concerned. He could testify personally to the ease and comfort of the ambulance, the movement being free from oscillation. He illustrated the necessity for such means of transport by referring to the fact that those seriously injured in the recent railway accident on the Great Northern Railway had been conveyed to the Royal Free Hospital in cabs.

Mr. DAVY said that the matter had been frequently discussed in the medical journals, but had never until now been taken up by the public. Dr. Howard's ambulance was admirably adapted for country districts or railway journeys, but he preferred the ordinary wheel litter or police stretcher for metropolitan districts. This, too, was the opinion of a public inspector who had seen the ambulance. Mr. Davy strongly animadverted on the insufficient provision for the transit of invalids made by the railway companies, and commended the slinging method adopted by the London and South Western Railway Company.

Dr. GILBART SMITH thought the necessity for some carefully devised ambulance system had been amply demonstrated by Dr. Howard. The barrow litter or stretcher was only suitable, if at all, for short distances. He referred to the fact recently shown by the Metropolitan Counties Board of the British Medical Association that hospital accommodation in London was imperfectly distributed, and in many districts was wholly inadequate; for out of a total of 4500 beds, no less than 3500 were situated within a radius of a mile and half of Charing Cross, thus leaving the thickly populated outlying districts almost entirely unprovided for.

Dr. S. MACKENZIE said that the care, skill, and ingenuity displayed by Mr. Howard, appeared to him to have been eminently successful in devising a vehicle suited for the conveyance of the sick of all kinds. At present, cases of apoplexy occurring in the streets were rattled over the stones, and patients suffering from typhoid fever, in an advanced stage, with ulcers in the ileum threatening to perforate, were doubled up in cabs. If persons, suffering from serious illness, could by application at a police station obtain an ambulance to carry them to a hospital, the poor of the metropolis would be greatly benefited.

Dr. HOWARD, in reply, stated that he disliked the wheel-litter, for it possessed no single qualification for the work required of it.

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February 13th, 1882.

ON SOME POINTS IN THE DIFFERENTIAL DIAGNOSIS  
OF INTRACRANIAL DISEASE—GENERAL PARA-  
LYSIS OF THE INSANE AND TABES DORSALIS.

By T. STRETCH DOWSE, M.D.

Dr. Dowse considered that in the pathology of the general paralysis of the insane and of tabes dorsalis we have an association of changes which are still open to much investigation, although the relationship of spinal to brain lesions in the general paralysis of the insane has been carefully observed by well-known authorities among whom the most prominent are Westphal, Voisin, and Mickel.

Dr. Dowse considered that in some exceptional cases it was a difficult matter in the initial stage of these two conditions to make a correct diagnosis. Erb very significantly says "naturally in all such cases the importance of the spinal becomes subordinate to that of the cerebral disease. Dr. Dowse quoted notes of cases in proof of his assertion, and said that Dr. Hughlings Jackson had laid great stress upon the value of optic neuritis or atrophy "when asso-

ciated with headache" as indicative of gross organic change within the cranium.

Since M. Preuet had called attention to occipital head pains in locomotor ataxy it has been found necessary to make our diagnosis with more care. In tabes when the fifth nerve is involved the pains are often rapidly migratory and resemble more the pains of neuralgia. And, what is most important to remember, they are not accompanied by an increase of temperature of the head as they are in the case of the general paralytic. The fifth nerve being more frequently involved in the latter than in the former condition, we find disturbance of sensation in the parts supplied by the sensory divisions of the nerve. Dr. Dowse said it was generally considered that the seventh nerve was of all the cranial nerves the first nerve to be objectively involved in general paralysis, and especially those branches which serve for the mimetic movements of the mouth and lips. Recent investigation, however, had led him to believe that the fifth nerve was more frequently affected than the seventh.

After reviewing the comparative signs and symptoms of tabes dorsalis and general paralysis of the insane, Dr. Dowse said that in the latter disease the first sign of ataxy was made manifest in some derangement of those complicated and combined movements of the tongue and lips which take place in articulation, but more than mere disturbance was found in the co-ordination of those movements, for there was in addition actual muscular paresis. The power of engendering individual simple movements was greatly lessened and no sustained muscular effort could be supported.

Dr. STEPHEN MACKENZIE remarked that Dr. Dowse's paper suggested many points for consideration. It was not surprising that diseases like tabes dorsalis and general paralysis should occasionally concur in the same subject, seeing that both were of a degenerative nature, and that whilst for purposes of description we constituted types of disease, disease did not confine itself to the arbitrary lines we sometimes laid down. As regards the ocular changes in general paralysis, physicians in general and hospital practices had few opportunities of watching cases throughout their course, and those they saw were usually in an early stage. As far as his experience went ocular changes were very rare. There was one point on which he would like farther information. Dr. Dowse stated in his paper he was inclined to regard cases of locomotor ataxy beginning with optic atrophy as cases of abortive general paralysis. He did not gather from what Dr. Dowse had said what evidence there was for this opinion, and thought it would require very conclusive proof before we accepted the statement.

Dr. STEWART (of Clifton) had seen many cases of mental disease in their earlier stages, and had been led to conclude that although the

symptom of locomotor ataxy is almost an invariable one in general paralysis of the insane, yet it cannot be looked upon as absolutely diagnostic. It was often very difficult to discriminate general paralysis in its early stages.

### TWO CASES OF LIMITED ASCITES.

By JOHN BRAXTON HICKS, M.D.

Dr. BRAXTON HICKS described two cases of limited ascites. One was limited by ordinary inflammatory material; the other by malignant disease of the peritoneum. In the former the whole effusion, both fluid and solid, was absorbed; in the latter the fluid was withdrawn by aspiration. Both cases very closely simulated ovarian cysts in definition and fluidity.

Dr. WYNN WILLIAMS asked what was the temperature in the first case, which appeared to him like one of haematocele. He had seen several cases like the second.

Dr. GREEN had never seen a case of localised ascites, and contended that in such cases the fluid was the result of a limited peritonitis, confined by adhesion.

Dr. EDIS related a case of peritonitis with limited effusion. It had been diagnosed by some as an ovarian dropsey, but exploratory tapping verified his diagnosis. He advocated early recourse to tapping as a diagnostic aid. In that case there was hardly any pyrexia.

Dr. WILTSHERE remarked upon the frequency with which pelvic cellulitis was mistaken for enteric fever. He could hardly admit the existence of localised collections of peritonitic ascitic fluid, believing such collection was mostly subperitoneal. He asked if in the first case the patient showed the chlorotic aspect accompanying the absorption of large haema-ovules.

Dr. GALABIN said the general diffusion of the peritonitis in the second case suggested its malignancy. The ovary appeared to be the starting-point of the growth. He did not consider that localised collections of peritoneal fluid were so very rare, and had diagnosed such a condition in a case, when subsequently an attempted ovariotomy verified the diagnosis.

Dr. R. LEE and Dr. HERON also spoke.

Dr. BRAXTON HICKS, in reply, said that in the first case there was doubt as to diagnosis. There had been no anaemia in the case. He would not suggest opening the abdomen unless he were sure there was an ovarian tumour.

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*February 20th, 1882.*

DR. BRAXTON HICKS read the notes of two cases. The first was one of suppuration after pelvic peritonitis following labour, in which a large amount of solid deposit was formed surrounding and fixing the uterus, and extending nearly to the umbilicus. In the median line there was a soft, prominent swelling three inches in diameter, with fluctuation, marked resonance, and succussion on agitating the pelvis. There was marked hectic fever. An opening being made by the scalpel, foetid gas, and a pint of stinking pus escaped. A large drainage tube was then introduced, and the sac washed out twice a day with iodine water. In three weeks the sac had completely closed, and the patient made an excellent recovery. Dr. Hicks remarked that it was important, when called on to treat such cases, to know what other conditions gave rise to succussion; and enumerated abscesses communicating with the intestines, as cæcal abscess, abscess resulting from ulceration of the stomach or intestines; sacs, as ovarian and extra-uterine, communicating with intestine, &c. He suggested that succussion would be found also where the bladder directly or indirectly communicated with the intestine. Also in cases of enlarged or fallen stomach. He asked the experience of the Society as to other causes producing succussion, as hernias, &c. He then discussed the origin of the gas in pyogenic sacs; and asked whether gas had been found in any case where it was impossible that air could have entered from abdomen, lung, or from external air.

The second case was, as Dr. Hicks believed, unique, one of extra-uterine foëtation, where, some months after the death of the foetus at full term, the fluid in the amniotic sac increased to such an extent that by the end of about five months after full term, the sac burst, and death by collapse ensued.

Dr. HABERSHON remarked upon the succussion in the first case, a sign which was often found in the dilated stomach. He had also detected a "splashing note" in an ovarian cyst which communicated with the cæcum; and he related details of a case of large intra-abdominal abscess containing gas in which this sign was present; but no communication was found with the bowel, although the abscess lay close to the intestine. The obscurity of diagnosis in these cases gave them great interest.

Dr. HEYWOOD SMITH suggested that the comparative thinness of the

abdominal wall or of the visceræ would aid in diagnosis, and urged the value of colonoscopy in such operations.

Dr. LISTER mentioned colonoscopy as a diagnostic means. He indicated the value according to abdominal section in such cases as those reported and described by Dr. Haberbach.

Dr. BALFOUR'S opinion is very thought that in Dr. Haberbach's case there might still have been a communication with the interior of the bowel. The diagnosis in his first case was clear enough, otherwise he would have made no report of his procedure. His experience of cysts communicating with the rectum was that as the sac contracts the opening into the bowel becomes smaller.

## A CASE OF PERFORATION OF THE VERMIFORM APPENDIX

By W. H. DAY, M.D.

Dr. Day relates one of a case of inflammation of the appendix vermiformis in a boy, fourteen years of age, followed by peritonitis and death. The patient was first seen by Mr. Irving Page, of Wimbleton, on October 20th, 1881, suffering from the symptoms of a common bilious attack. On the 21st there had been no action of the bowels for three days; but a dose of castor oil brought away some hard lumps of faecal matter. On the 22nd the abdomen was hard and tender, and he vomited yellow bile in the early morning. On the 23rd at 10 a.m. he had a slight rigor; temperature 101°, pulse 120: hands and feet cold and clammy; abdomen tympanitic. Dr. Day joined Mr. Page in consultation; but the patient gradually became worse, and died at 12 p.m. After death the usual signs of peritonitis were found, the intestines were glued together in places, and there was about a pint of healthy pus in the abdominal cavity. The appendix vermiformis was much inflamed, and contained several faecal masses about the size of a pea. No external opening could be discovered.

Dr. COUPLAND mentioned two cases of ulceration and perforation of the appendix cæci which he had seen in the Middlesex Hospital. One was in a girl, aged fourteen; the other in a boy, aged eleven; and Dr. Coupland asked whether there was any explanation for the greater proneness of young than of adult persons to this affection. In each of these two cases there were symptoms of constipation, typhlitis, and peritonitis; and in each the appendix at the seat of and above the perforations was blocked by faecal concretions. The mechanism of the ulceration was probably the same as that which occurs in the colon and cæcum from faecal accumulation.

D. SANHOM said it would be interesting to learn the nature of the

concretions in Dr. Day's case. Although children are in the habit of constantly swallowing hard foreign bodies, he had not met with a single case of their impaction in the appendix except some years ago at King's College Hospital, when in a case of this kind the nucleus of one of these concretions was found to consist of a felted mass of oat-hairs from a pudding.

Dr. HABEESHON asked if in any of these patients there had been any indications of tubercular disease, which might determine the proclivity to inflammation of the appendix. He thought the concretions shown by Dr. Day were of faecal origin, and had seen similar cases. He alluded to the common and great error of administering purgatives in the early stage of cæcal disease, the treatment of which consisted in rest by opiates, and poultices to the abdomen.

Dr. HEYWOOD SMITH thought it advisable to combine large doses of calomel with the opium with a view to cut short the peritoneal inflammation.

Dr. DAY, in reply, remarked that at the beginning of the disease the boy was treated as for an ordinary bilious attack. His mother was certainly of tuberculous diathesis. Dr. Day was much opposed to the administration of calomel.

Dr. COUPLAND added that the mother of one of the children he mentioned had died of phthisis; but in both cases all the viscera, except the appendix cæci, were healthy. In both the treatment consisted mainly in opiates and fomentations.

The concretions in Dr. Day's case were referred to a committee, consisting of Drs. Day, Coupland, and Sansom, for report as to their nature.

*The Committee reported at the following meeting that the concretions were faecal and not of the nature of gall-stones.*

#### A CASE OF LARGE GALL-STONES, SIMULATING AN ABDOMINAL TUMOUR.

By SPENCER WATSON, F.R.C.S.

MR. SPENCER WATSON read notes of a case of large gall-stones simulating abdominal tumour. A widow lady, aged seventy-nine, of spare frame and constipated habit, had suffered during the year preceding the attack of gall-stones from neuralgic pain in the head, right side of neck, and right arm, and also from epistaxis with ulceration of the septum nasi. In the autumn of 1880 symptoms of acute intestinal obstruction set in, with supposed hydatid tumour of the abdomen and escape per anum of abundant serous fluid, and white hydatidiform membranes. Subsequently the originally soft globular tumour gave place to a hard nodular painful tumour which occupied the right side of the abdomen, but remained stationary and unchanged for about nine months, when another attack of acute

intestinal obstruction came on, and a calculus, the size of a small bantam's egg, was passed per anum. At the same time a slight diminution in the size of the abdominal tumour was noticed and the symptoms of obstruction passed off. A few days after, however, vomiting and tenesmus recurred, and after the administration of a large oil enema two large calculi were found in the rectum, whence they were with difficulty extracted. The symptoms then all disappeared, and the tumour also. There had been occasional transient attacks of vomiting and abdominal pain, but no obstruction and no calculi had been found in the stools. The gall-stones were composed for the most part of cholesterine, and the three together weighed nearly two ounces. There was no jaundice at any period of the case. Mr. Watson suggested that the epistaxis noted as an early symptom might have been induced by irritation of the nostril, referable in the first instance to the intestinal irritation due to the presence of the gall-stones, and that this condition was analogous to the nose-picking and sore nostrils in children affected with thread-worms. The case, however, was chiefly interesting on account of the large size of the gall-stones and the difficulties of diagnosis before they were passed.

#### A GALL-STONE OF UNUSUAL SIZE.

By EDWARD JOHN PARROTT (of Uxbridge).

MR. E. J. PARROTT exhibited a specimen of gall-stone of unusual size from a female, aged sixty-five, in whom the first attack of gall-stone occurred in 1865, in the second in 1866, and the third in February, 1875. In March, 1880, commenced a prolonged series of attacks of hepatic colic, with jaundice and vomiting, with more or less long intermissions. The sickness was mostly subdued by morphia. In January, 1881, Dr. Broadbent saw the patient in consultation. On the 24th of that month a calculus one inch and three-quarters in circumference, and having three concave facets, was passed, and another measuring two inches and a half in circumference. In February, March, and April the attacks recurred, but then the jaundice gradually disappeared, only intense itching of the skin remaining.

The PRESIDENT remarked that the two cases together illustrated two modes of passage of gall-stones. In Mr. Watson's case the stone had

apparently passed into the colon by ulceration; in Mr. Parrot's the stone had passed along the duct, possibly continually ulcerating into the small intestine. He then showed a large gall-stone which had been passed by a lady between fifty and sixty years of age. She was suffering from well-marked jaundice, and on examination the liver was found to be very large and irregular. There was some pain and tenderness, but no attack of severe suffering like that caused by the passage of gall-stone had been experienced. She had, however, from time to time severe attacks of asthma. The case was diagnosed as one of malignant disease, but after the jaundice had lasted about eighteen months the gall-stone was passed, and the patient gradually recovered, no recurrence of asthma taking place.

Dr. HABERSHON asked for the exact situation of the prominence in Mr. Watson's case. In his experience very large gall-stones had not taken such a favourable course. He instanced several cases.

Dr. ROUTH related a case where a large gall-stone was found when the patient was under the influence of chloroform.

Dr. WYNN WILLIAMS mentioned the case of a man in whom retention of urine accompanied the passage of gall-stone.

Mr. WATSON, in reply, said that the tumour occupied the space between the right iliac crest and the last rib. It was about four inches long.

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*February 27th, 1882.*

#### ENCHONDROMA OF THE ARM, AMPUTATION AT THE SHOULDER-JOINT.

By FRANCIS MASON, F.R.C.S.

Mr. FRANCIS MASON exhibited a man who had been sent to him, at St. Thomas's Hospital, by Mr. J. W. George of Malvern Link. The patient was forty-five years of age, and had a large enchondromatous tumour, involving nearly the whole of the left humerus. The tumour measured, in its greatest circumference, twenty-four inches. It commenced nine years ago as a small lump on the outer side of the arm, about the situation of the insertion of the deltoid muscle, and had gradually increased in size without occasioning any pain. About a month ago Mr. Mason amputated the limb at the shoulder-joint, taking a skin flap on the outer, and a smaller skin flap on the inner, side of the growth, the joint being opened from behind, and the large vessels divided last. The antiseptic spray was not used during the operation, but was employed afterwards. The patient made an uninterrupted recovery, and showed no signs of having undergone so severe an ordeal. Photographs of the patient before the opera-

tion were exhibited, and also half the tumour in section. The whole tumour, together with the humerus entire, after all the soft structures had been removed, weighed nearly 11 lbs.

### A CASE OF ENTERIC FEVER.

By DONALD WM. CHAS. HOOD, M.D.

Dr. DONALD Hood read notes of a case of enteric fever, followed, during convalescence, by general phlebitis, with pulmonary thrombosis, death occurring on the seventy-seventh day. The patient was admitted into the West London Hospital under Dr. Thorowgood, on October 29th, 1881. He was twenty-one years old and had been ill before admission about three weeks. He presented the symptoms of enteric fever of mild type; and after admission began to improve, there being nothing in the nature of the case calling for special attention, except marked pain over the abdomen. Temperature was reported as being normal on the fifty-fifth day of illness, and remained so for the following eight or nine days, the patient being allowed to get up, his condition giving rise to no anxiety. Three or four days later, while up, the patient was suddenly seized with severe pain over the region of the spleen. There was a rise of temperature; and subsequently an attack of phlebitis manifested itself, affected the following veins in the order mentioned, *i.e.* right posterior tibial, right saphena, right brachial. Eight days before death the pulmonary artery appeared implicated. The pulmonary trouble gained ground, as evidenced by the increasing dyspnoea, with a scanty hæmoptysis. It ultimately led to the death of the patient. The post-mortem examination showed pulmonary embolism; in the ileum were found healed cicatrices. Dr. Hood wished to call the attention of the Society to the insidious nature of the onset of phlebitis in connection with the pelvic and abdominal veins; and he urged the importance of taking special note of any symptom which might lead to an earlier diagnosis than that usually made. He mentioned the fact that cases of phlebitis were often preceded by pain over the hip; such pain often being in the first instance ascribed to rheumatism but finally being evidently connected with phlebitic mischief. In support of this argument, he adduced two cases in which marked

phlebitis had been ushered in by hip pain. He mentioned that the cause might be looked for in implication of the gluteal veins. Cases were also cited showing the insidious manner in which such attacks commenced ; patients being supposed to be convalescing favourably, until lesion of an important blood-channel directed attention to mischief which necessarily must have been present some days. He further wished to draw attention to gradual clotting, which may take place even in the pulmonary artery.

Dr. BROADBENT referred to the importance often to be attached to local pain in the early days of thrombus formation during recovery from enteric fever, and related a case in which a deep-seated and persistent pain in the calf of one leg was the first indication of a venous coagulation which eventually implicated the iliac trunks.

Dr. THOROWGOOD also referred to the symptom of acute pain, which in one case was referred to the neighbourhood of the hip, the real seat of the disease being in the uterine veins. The subject of Dr. Hood's paper had a particularly weak heart, the action of which improved under brandy.

#### SOME SUGGESTIONS FOR A MODIFICATION OF THE GERM THEORY OF DISEASE.

By K. W. MILLICAN, B.A., L.R.C.P.

THE antagonism of opinion between authorities of repute concerning the nature of contagium became strongly evident to me in the consideration of a case to be presently related which occurred in my practice. An endeavour was, therefore, made to construct an hypothesis which, while admitting all that was positive in the various explanations of contagium at present extant, should at the same time be capable of explaining those exceptional cases which caused the adherents of each party in turn to negative the propositions of the other. It is, however, to be clearly understood that what is here advanced claims to be no more than a mere hypothesis ; and should it obtain general acceptance as being probably well founded, it would still require to be verified at the hands of those skilled in the investigation of nature. The case which called forth this train of thought was briefly as follows.

A farm labourer, aged twenty, was found to be suffering from diphtheritic typhoid. On the twelfth day of the fever a crop of rose spots had appeared on the abdomen, and the chest displayed a peculiar marbled appearance, livid in colour, over the pectoral regions,

becoming distinct mulberry petechiae over the sternum. The temperature was 105° F.; pulse 140; respiration 34. On the fifteenth day of fever the temperature had fallen to 100° F., and the patient was easier. The mother called my attention to some pimples on the buttocks and wrists. The rose spots were soon replaced by others, and the purple spots faded away. On the twenty-first day of the fever the pimples on the buttocks and wrists had become vesiculated. The mother's dictum was "that they looked for all the world as if he had been vaccinated." The father thought them "like the cow-pox." On the twenty-fifth day, when I saw him, the temperature was 105·4° F., and the vesicles had suppurated. The pustules scabbed over, the rashes disappeared, and ultimately the patient recovered.

The peculiar features of this case are: (1) the combination of symptoms simulating typhoid, diphtheria, typhus, and small-pox, co-existent in one person; (2) the impossibility of tracing direct contagion of *any* infectious disease; and (3) the fact that no disease was transmitted.

Dr. Wilson, the medical officer of health, who saw the case in the very early stage, wrote in reply to my queries, that the only source of contagion was of a purely local character; the lad had had no communication for many months with anyone except people with whom he was intimate; and to my certain knowledge there were no other cases of infectious disease previously in the neighbourhood. The points specially commented on by Dr. Wilson were: (1) a habit of drinking out of wayside pools; (2) the deposit of excremental matter from closet-pails at the bottom of the garden; (3) the presence of an old cesspool into which the drains conveying slops emptied, and which received the drainage from the privies, previous to their conversion into pail closets. Milk and water agencies were quite cleared of blame.

The problem thus presented for solution is the apparent *de novo* origin of a disease resembling in some of its characters four commonly supposed distinct specific diseases. In considering the explanations of the acute specific contagia, we are met by two principal rival theories—the "germ theory" and the physiologico-chemical view.

Arguments on behalf of the latter are mainly negative: (1) the *de novo* origin of certain cases of disease; (2) absence of conclusive demonstration of the organic nature of the poison; although organ-

isms have been found in disease, they have also been observed in the healthy subject; and (8) no necessity for such an hypothesis; uræmia and other toxic conditions amply prove that serious morbific results quite comparable to those of acute specific diseases may be produced by chemical decomposition in the system.

The majority of the medical profession, however, appear to be almost unanimous in adopting the "germ theory" in some form or other. The principal arguments are—(1) Antecedent probability by comparison with yeast fermentation, the result of the *Torula cerevisiae*, concerning which a clear parallel is drawn by Dr. John Shea in the 'Medical Times and Gazette,' of Dec. 20th, 1879. The chief heads are as follows. There is in each—(a) an organic fluid; (b) possibility of fermentation by germs; (c) rise of temperature; (d) correspondence between kind of germ and kind of fermentation; (e) disappearance of germ on completion of fermentation, with appearance of spores, which after an interval re-establish fermentation until susceptibility is exhausted; (f) possibility of checking this sequence by cold and a bitter. (2) The evidence connecting the occurrence of organic forms in the blood with special diseases, which is rapidly receiving fresh confirmation—*e.g.* spirilli in relapsing fever. (3) The evidence from parentage: like produces like. (4) The extensive reproduction of the poison. (5) The presence of fixed incubation periods.

It now remains to be considered whether the contagion is one and protean in its manifestations, or multiple and specific. Arguments in favour of the latter—(a) Constant production of like from like; (b) antecedent improbability of such diverse manifestations being the result of a common cause; (c) the connection of distinct forms with distinct diseases.

In favour of the "unity" theory may be stated three classes of cases—(a) Where disease of one type appears to reproduce disease of another type; (b) where two or more distinct diseases appear to result from a common cause; (c) cases of indeterminate type.

*Class 1.*—Mr. G. de Gorrequer Griffith quotes ('Obstetrical Journal,' June, 1879), a case related by Dr. Holland, where from patients in a school suffering merely from nasal discharge and labial excoriation an epidemic, "presenting every conceivable variety of scarlatina and diphtheria with and without rash, resulted." Cf. also the relation of scarlatina to ordinary septic fever as evidenced by "surgical scarlatina." Also the fact that cases of puerperal fever

have been traced to the contagion of measles, diphtheria, typhus, typhoid, and scarlatina. (Dr. Braxton Hicks, 'Trans. of Obstet. Society,' vol. xii.)

In *Class 2* many cases are quoted: (1) A case of scarlatina, and scarlatina from diphtheria, arising from same source (Mr. Griffith in article quoted *supra*). (2) Case of three dustmen from the same yard, admitted close together into St. Mary's Hospital; two had rosy typhoid spots, one mulberry petechiæ. (Dr. K. Chambers: 'Lectures chiefly Clinical,' p. 96.) (3) Case of a boy sent to St. Mary's Hospital with rose spots of typhoid; mulberry typhus spots had recently been in the boy's family, and one brother had died of it (Dr. K. Chambers: 'Lectures chiefly Clinical,' p. 98). (4) Case where typhoid and pneumonia appear to have arisen from the same cause (Dr. K. Chambers: 'Lectures chiefly Clinical,' p. 104).

*Class 3*.—Instances so numerous in most practices, that it is scarcely requisite to adduce any. I have had cases of rötheln, some leaning towards scarlatina, others towards measles. A recent case also which I relate appeared to be one of aborted *de novo* typhus. Moreover, the case at the commencement of the paper is a notable example. Also one of the dustmen mentioned by Dr. Chambers (*supra*) developed a mixture of rosy and mulberry spots.

How, then are we to reconcile the specificity of these diseases with the admission of their possible *de novo* origin, and their aberration of type, consistently with the germ theory? To answer this question I propose to apply the doctrines of evolution and the origin of species. We must not look too much to the organism, but must consider also the influence of the pabulum. Suppose an "indifferent" organism which has never had its habitat in the human body. If that organism get introduced therein, it will endeavour to "adjust itself to its environment." If it succeed it will develop, and reproduce its like. To do this it must have some pabulum, which it will probably extract from the blood. The chemical alteration thus effected in the blood is quite competent to account for a train of symptoms. But the original organism, which by a process of "adjustment to its environment" appropriates as pabulum certain elements of the blood, because (a) of their superabundance, (b) their similarity to its natural food, or (c) their devitalised and consequently *unstable* condition, will implant on its offspring an hereditary tendency to select the same pabulum on introduction into another host. We shall thus have a *reproduction* of the same train

of symptoms in another case. The farther the germ is from the parent stock the more firmly will this hereditary tendency to selection be implanted, and the more "specific" will become the disease.

A probable argument in favour of this theory is the acquisition under proper cultivation conditions by the harmless bacillus *fœni* of the virulent properties of the bacillus *anthracis*, and also the reverse experiment—viz. Pasteur's modification of the virulence of the bacillus *anthracis*, whereby it becomes possible to inoculate therewith with safety. I cannot help thinking that the application of this principle will explain all the abnormal and conflicting conditions which have hitherto proved so puzzling—the *de novo* origin of "specific" diseases, their usual "specificity," their occasional aberrations, and the various gradations and indeterminate types which are so common and so puzzling.

In conclusion, I venture to suggest that a true solution of the difficulty will result, not from trying to classify all abnormal cases under certain uniform types, but rather from a careful observation of their aberrations and distinctive characters, and an accurate record of the same.

Dr. SANSOM thought the alkaloidal theory was held by but few observers of the present day. He considered the differences of soil even of more importance than those of organisms in determining the nature of the specific disease. The conception of a germ should embrace a protoplasmic basis and a soluble envelope of varying amount.

The PRESIDENT said that the germ theory threw light upon obscure points in the history of fevers. The paper was very valuable. It was to the country practitioner rather than to those of large cities that one must look for anomalous cases such as those on which Mr. Millican had based his remarks. The clinical account given of the case seemed like ulcerative endocarditis. The association of diphtheria and scarlet fever was not infrequent. He was convinced that the appearance of diphtheria might be absolutely independent of any pre-existing case.

### BICHROMATE DISEASE.

By B. W. RICHARDSON, M.D., F.R.S., &c.

DR. B. W. RICHARDSON read a paper on "Disease from Bichromate of Potassa (Bichromate Disease). He commenced by stating that the first description of the local diseases arising from the action of bichromate of potassa was given in this country by himself in a report on "Forensic Medicine," in the October number of

the 'British and Foreign Medico-Chirurgical Review' for the year 1863. He was indebted for the facts to MM. Chevalier and Bécourt. In transforming the neutral chromate of potassa, by means of acid, into the bichromate, the vapour evolved carries with it an infinite number of pulverised particles of the bichromate, which particles diffuse through the workshop, and are easily visible in a ray of sunlight. The molecules, inspired in abundance, give to the palate a bitter and very disagreeable taste; but as profuse salivation is the result, the chromate is thrown off in the saliva, and has not time to inflict any permanent injury. If, however, the respiration be made by the nose, the molecules are dissolved in the layer of secretion which lies on the membrane of the septum of the nose, creating a violent pricking, suffusion of tears, and irresistible sneezing. In time the membrane begins to be thrown off, and portions of it are carried into the handkerchief used in blowing the nose; this process, when once started, goes on so rapidly that after a period of six or eight days the septum becomes thin, permeated with openings, and is ultimately detached altogether. At this point all the symptoms that have been described cease, and the workman scarcely notices the loss of the nasal partition. This process of ulceration of the septum of the nose occurs in every workman, except in those who take snuff. In these, owing to the layer of powdered tobacco which covers the membrane, and the frequent use of the handkerchief, the evil is often prevented. On the skin in its normal state, the epidermis being intact, the bichromate, according to the authors named, exerts no baneful influence; the hand may be plunged into a strong and hot solution of the salt without fear; the hand may also remain covered with the salt for an entire day, without any observed effect; but if the skin is torn or abraded, however triflingly, a sharp pain is felt on the exposure; and if the salt be left in contact with the wound the caustic character of the salt is brought out intensely, the cutaneous tissue is decomposed, and violent inflammation is established. These symptoms are accompanied with intense pain, especially in winter, when the cold is severe; the action of the salt does not cease until the cauterisation has penetrated to bone. When a workman is clean and careful he prevents these accidents, but if he is careless, and allows the bicromate, either in powder or solution, to touch abraded parts or sores, or wounded surfaces, he must immediately use remedial measures or suffer a severe penalty. In some cases,

where the workmen are too lightly clad, they are attacked with violent itching, followed by suppuration and ulceration of the moist surface of the penis around the glans. This condition may progress until a disorder not unlike syphilitic ulceration may be presented. The effects of the bichromate are shown on inferior animals as well as man. Horses employed in the manufactory, and which walk over the salt, are attacked in the feet; the hoof falls off, the inflammation extends to the upper part of the leg, causing the hair to fall off, even to complete denudation. Some important particulars were supplied on this point by M. Clouet, a manufacturer at Havre. A horse employed in carrying the bichromate was attacked in one of his hind legs. The wound became so painful as to necessitate absolute rest; the suppuration went on extending through the limbs, and enormous suppurating surfaces invaded the almost entire half of the animal. Death occurred a month from the commencement of the malady. Some further facts were given from M. Clouet in reference to the nasal ulceration. It was shown that both sexes were equally influenced, and at all ages; that the affection usually made its appearance within a week after exposure, and that the disease was very easily brought about in workmen who, having stained their fingers with the bicromate, put them into the nostril. M. Clouet also made the remarkable observation that in all the workmen who had lost the septum, nasal catarrh was entirely unknown. Dr. Richardson observed that it was not reasonable to allow such an important piece of clinical observation as was conveyed in this report to pass without further inquiry. He began, therefore, soon after the appearance of the report to institute such an inquiry in this country. It was many years before he met with any evidence. At last, four years ago, a case not of nasal but of cutaneous disease came before him, in which the arms and hands of a worker in bichromate solution were severely attacked. The symptoms in this case presented the character of acute eczema of the arms, with a scaly eruption on the palm of one hand like psoriasis. Since then he had seen five cases of cutaneous affection from this cause, the details of which were given in full. In one of these cases the symptoms were like those of pityriasis rubra. The sufferers were workers in the autotype process of photography, in which a solution of bichromate of potassa is used to render the gelatine employed in the process insoluble, under the influence of light, in warm water. In regard to treatment it seemed clear that

some local good was effected in certain stages by the use of sub-acetate of lead, but there was no rationale in other methods of treatment. In fact, the whole question of treatment resolved itself into one of prevention, and this was being carried out by the wearing of india-rubber gloves. Bichromate disease might therefore be looked upon as an affection of a transitory character, but at the same time as an affection of exceeding importance for study both etiologically and pathologically. It was an accidental synthesis of disease. Here was an inorganic substance which applied to the surface of the living body produced certain local diseases closely similar, if not identical, with other diseases, the causes of which are very obscure —viz. progressive cellular ulceration, assuming occasionally the rodent form; ulceration of cartilage; and cutaneous affections which resemble the three allied diseases—psoriasis, eczema, and pityriasis. These symptoms progressed and passed through their stages towards recovery after being produced by an entirely local action. The facts opened up the novel question whether the same series of changes occurring from a less obvious cause in ordinary allied diseases might not be due to some local product which acted chemically upon the structures to produce the same effects. In conclusion, Dr. Richardson drew attention to the curious observation of M. Clouet—viz. that all his workmen who had lost the septum of the nose seemed to be protected from nasal catarrh. This observation, small as it might seem, had really important bearings both of a physiological and pathological order.

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March 6th, 1882.

#### A CASE OF LYMPHADENOMA.

Exhibited by A. ERNEST SANSOM, M.D.

DR. SANSOM showed a case of lymphadenoma (Hodgkin's disease) in which there had been suppuration of some of the glands. It was a girl aged five years and a half, who had been under his care for six months. There were enlargements of glands in the neck, axilla, and groin. The spleen was much enlarged and felt hard, and there

was marked anaemia. Much improvement attended the administration of Fowler's solution in increasing doses. After two months' treatment suppuration occurred in a group of glands seated outside the right sterno-mastoid; an abscess formed and was evacuated, healing well under antiseptics. Dr. Sansom was not aware of any recorded case of Hodgkin's disease in which a like suppuration had been noted. The anaemia remained stationary, and the spleen was increasing, but in many places the glands had diminished in size.

The PRESIDENT pointed out that in many respects the case differed from Hodgkin's disease, which he had seen improve under arsenic; but recovery was quite the exception, as was also suppuration of the glands.

Dr. STEPHEN MACKENZIE said that in some cases of Hodgkin's disease suppuration did occur, and no doubt some recovered. He related details of one well-marked case under his care with recovery under arsenic.

#### A CASE OF CONVULSIVE SEIZURES BEGINNING IN THE RIGHT FOOT OWING TO CORTICAL TUMOUR OF THE LEFT CEREBRAL HEMISPHERE.

By J. HUGHLINGS JACKSON, M.D. F.R.S.

THE patient died January 1882, having had fits, always beginning in the foot, about fourteen years. He was first under Dr. Hughlings Jackson's care in 1872. In some of the seizures the arm was affected after the leg, in some of these he lost consciousness, and possibly then the spasm was still more widely spread. After some of the fits, if not after every one, the leg was partially paralysed, and after repeated fits it was almost completely paralysed. The man died hemiplegic of the right side and of right-sided pneumonia. It was not known whether this hemiplegia followed convulsive seizures or not.

The report of a very careful and elaborate examination of the brain by Dr. James Anderson was read and two drawings made by this physician were exhibited. A gliomatous tumour, in which were some small clots, was found involving, as looked at superficially, the posterior half of the superior frontal convolution and that portion of the ascending frontal convolution from which it arises,—here the upper half. About half an inch of the upper extremity of the ascending frontal was normal. All the disease was in front of the fissure of Rolando. Dr. Hughlings Jackson said the situation of the tumour did not correspond with other observations he had

recorded in cases of this variety of convolution, nor at all closely with Ferrier's localisations. He referred especially to the temporary paralysis after the fits, to the long duration of the liability to seizures of the same kind in a case where tumour was found post-mortem, and to the almost complete absence of symptoms pointing to local gross organic disease. There was very little headache and optic neuritis was never seen. The convolution was only of localising value.

Dr. Crichton Browne was reminded by the paper how Dr. H. Jackson had been able, by his careful induction, to foreshadow the discoveries of physiology. Dr. Ferrier had spoken with caution concerning the crural movements, because his experiments had been made on monkeys.

Dr. Stephen Mackenzie said the man had been frequently under his care as an out-patient, and he thought that towards the close the patient had stated that the fits, which previously had always begun in the foot, had commenced in the right hand and on the right side of the face. There were fair grounds for believing the lesion to have been gliomatous from the first. Optic neuritis, though frequently looked for, was not detected. Treatment did much to ward off the effects of a tumour, even when this was malignant. It was important to remember the liability to haemorrhage in connection with gliomatous tumour.

Dr. Warner said that a short time ago a patient, whilst under the influence of nitrous oxide gas, had been attacked with convulsions beginning in the right side of the face and right hand; and he had heard of other cases where spasmodic attacks from some source of local irritation had occurred during the administration of the gas.

The PRESIDENT said that in uremia the spasm frequently took a unilateral course. He entirely agreed with Dr. Jackson in his views on destructive and irritative lesions, and mentioned the case of an aphasic man who had unilateral convulsions, which began in the right arm without any implication of the face. He could not accept Dr. Jackson's view as to the mode of production of the hemiplegia following unilateral convulsions, but thought that it was due rather to the congestion and ecchymosis, also giving rise to the spasm. In such cases there was often loss of sensation after an attack, not explained by exhaustion of motor centres, but which might be due to congestion.

Dr. JACKSON briefly replied.

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*March 13th, 1882.*

INTRODUCTORY ADDRESS.

By FRANCIS MASON, F.R.C.S.,  
PRESIDENT.

THE newly-elected president Mr. Francis Mason delivered his introductory address. He remarked that in reflecting on how he might best address the meeting, the irresistible and unalterable fact forced itself upon him that he had had the honour of being associated with this Society for the last twenty years, and that thus by a curious coincidence, he would during his presidential year attain so to speak, his majority in the Society. He then gave a general outline of his experience of the Society for the past twenty years, and paid a high compliment to the memory of the late Dr. Sibson who had admitted him in 1862, and spoke in flattering terms of the other past presidents. He then referred to the various appointments he had held in the Society, and reminded the meeting that he had been their Hon.-Secretary, their Orator, and their Lettsomian Lecturer, and for the last two years their Treasurer, and added, that he parted with this last position with some pride and satisfaction, inasmuch as the annual balance sheet showed he was enabled to hand over to his successor Dr. Wiltshire the largest balance the Society had had, with one exception, and this case was not strictly a comparable one. The President then referred to the rapid progress of the Society since the Council had decided to take the rooms they at present occupy, and paid a just tribute to Mr. Bryant for his prompt and vigorous action in the matter, and further gave the Society the gratifying assurance that although it was not by any means rich, it was not at the present moment in financial difficulties.

The President then remarked that the Council were not without anxiety, for they had had to pay for the publication of the fifth volume of the 'Proceedings.' This volume of the 'Proceedings,' he felt sure was highly appreciated by the Fellows, and reflected the greatest credit on the two editors Dr. Gilbart Smith and Mr. Edmund Owen. The President then announced that in order to afford increased accommodation to the Fellows, the Council were contemplating taking some adjoining premises, and that as this

step would involve certain expenses, he suggested that each Fellow should undertake to introduce at least one more Fellow during the current session ; so that the Council might go to their work joyously, and in the fullest confidence that the success of the Society was permanently assured.

The PRESIDENT then in graceful terms acknowledged the distinguished honour that the Society had conferred on him by electing him as President, and thanked the Fellows for this priceless testimony of their approval and good opinion, and believed he could not go far wrong, if he followed closely in the footsteps of his predecessor Dr. Broadbent.

He then gave a striking instance of Dr. Broadbent's foresight as to the vitality of the Society, and reminded the meeting that twenty years ago, the meetings were held as now, weekly, but in 1864 the Society elected to hold them once a fortnight. Dr. Broadbent and Mr. Rogers Harrison strenuously opposed this change, indeed they stood alone in resisting it. The President then added that he was bound to say that he had voted with the majority, that is for the fortnightly meetings, but that now seeing the unquestionable success of the weekly meetings, which were resumed in 1868, owing to the zeal of Dr. Richardson, and believing that confession was good for the soul, he freely admitted he was sorry he had done so.

The PRESIDENT then assured the Fellows that he would endeavour to further the interest of the Society to the utmost of his power and said he should look for the experience of the senior Fellows, he should solicit papers from the junior Fellows, and more than this he should invite discussion from those gentlemen in general practice who were so well able to help the discussions materially, and so usefully.

The PRESIDENT then stated that on looking through the records for the past twenty years, he had been astonished at the enormous amount of work that had been achieved. There was scarcely a single subject connected with medicine and the allied sciences, which had not been discussed with advantage, incontestibly proving that the Society had been, as he hoped it would continue to be, thoroughly representative of professional opinion. He then added that as the outcome of his researches there were still many points which might be discussed, and concluded an interesting and able address, by remarking that any one who had attended the meetings had he was sure no special reason to regret being a Fellow of the

oldest Medical Society in London. Speaking for himself, he could honestly say he had never gone away from a single meeting without feeling that he was a wiser and a better man, wiser in the sense that he had learned a great deal, and better, in that he had been taught to exercise forbearance, and to remember that whilst he might have opinions of his own, it was his duty to respect the opinions of others. The Fellows might rest assured there was no fear in this Society from a full and free discussion as long as the aim and sole aim was "To prove all things, and hold fast that which is good."

#### A CASE OF TETANY.

By F. DAWTREY DREWITT, M.D.

DR. DAWTREY DREWITT brought forward a case of tetany in a male child eleven months old, who had been fed upon arrowroot and corn-flour from earliest infancy, with the result that he suffered from gradual intestinal trouble and rickets. Accompanying the rickets there was alarming laryngismus stridulus, and, with the laryngismus, tetany. The most characteristic symptom was rigidity of the hands, the adductors appearing to be in a state of spasm, the fingers approximated and flexed only at the metacarpo-phalangeal joint, the thumb adducted, extended, and opposed to the middle finger. The feet were arched and the toes slightly flexed. The spasm appeared to be painful, but under proper diet and cod-liver oil it rapidly subsided.

Dr. BROADBENT had seen several instances in women, and had seen benefit arise from the use of belladonna, possibly from its action on the peripheral nerves.

#### THE EARLY TREATMENT OF PROSTATIC OBSTRUCTION.

By REGINALD HARRISON, F.R.C.S. (Liverpool).

MR. REGINALD HARRISON, of Liverpool, read a paper on the Early Treatment of Prostatic Obstruction. About one half the subjects of enlarged prostate suffer from interference with micturition. This is not interfered with when the hypertrophy is towards the rectum and the relations of the prostatic urethra are unaltered; and

secondly, when the hypertrophied gland is lobulated, 'having channels through which the flow of urine can pass. He therefore advocated an early resort to mechanical dilatation, the danger of irritating the prostate by such interference being less at that period than when it was much enlarged and there was retention. For this purpose he employed a gum elastic bougie, two to four inches longer in the stem than usual, with an expanded portion an inch from the top, which is made to enter the bladder so that the prostatic urethra is subjected to pressure on the insertion and withdrawal of the instrument. As a rule, if dilatation is not too rapidly proceeded with, no irritation is aroused; but greater toleration of urine follows from the ease and completeness with which the bladder is then emptied. In some individuals intolerance of urethral interference was due to the urine containing uric acid in unnatural quantity and form, and on the correction of this the intolerance passed away. He had already had sufficient proof of the efficacy of this procedure, patients regaining the power of micturition they were beginning to lose. His object was to encourage a preventive treatment for a condition which was often followed by very distressing results which at present were only sought to be palliated.

The PRESIDENT surmised that the treatment of these cases would vary with their character, and asked why a bougie was preferred to a catheter.

Mr. PEARCE GOULD pointed out the impossibility of foretelling that a case, if untreated, would become "severe," and that the conditions were very different from those present in urethral stricture. In most cases the retention was as much due to atony of the bladder as to obstruction, and he thought that regular catheterisation would be of more value than Mr. Harrison's method.

Dr. SYMES THOMPSON mentioned a case of atony of the bladder in aortic valvular disease, where a pouch had formed in the viscus in consequence of the atony, which lessened whilst regular catheterisation was practised, but recurred on its discontinuance.

Mr. EDMUND OWEN did not believe that urine was retained in a pouch behind the prostate in these cases, but rather that the retention of urine was due to the inability of the bladder to express the fluid that lay behind the hypertrophied gland. Mr. Harrison's plan ensured by catheterisation the extraction of this small amount of urine; but he was not prepared to admit that recourse to instrumentation could materially influence the hard prostatic tissues. He asked at what period was the treatment commenced.

Mr. BRYANT said that cases seldom presented themselves until they were beyond the benefit to be derived from Mr. Harrison's measure. He himself understood and adopted the plan of regular catheterisation, so keeping the urethral orifice open, and possibly moulding it, and agreed that atony of the bladder entered into these cases. But he did

not see what effect could arise from the use of thin bougies, except in very early stages, when, perhaps, their use was hardly justified.

Mr. HARRISON, in reply, said the treatment only applied to cases which threatened obstruction of urine from the commencement. It was not applicable in cases where atony or pouched bladder was responsible for the symptoms.

### A CASE OF STRICTURE OF THE RECTUM.

By R. S. FANCOURT BARNES, M.D.

Mrs. B—, æt. 65, had been suffering from constipation for some years. She saw Dr. Thomas Horne, of Sandwich, on August 12th, 1882. The bowels had then not acted for twelve days. There was considerable abdominal distension. She had vomited in the morning for the first time. Dr. Horne endeavoured to administer an enema, but could only get about four ounces of fluid into the rectum. Digital examination showed the rectum to consist of a kind of cul-de-sac. Soft bougies were tried without success. Dr. Horne, thinking the condition might be caused by retroflexion of the uterus, then sent her up to see Dr. Fancourt Barnes, who found a hard growth apparently springing from the sacrum and involving the upper part of the rectum. The uterus was normal in size and position. The mass felt, per vaginam, firmly attached to the sacrum. Dr. Fancourt Barnes regarded it as a sarcomatous growth causing stricture of the rectum, and advised the patient to undergo colotomy. This she refused to do, and she died three weeks later.

The post-mortem examination by Dr. Horne revealed enormous distension of the intestines, especially the colon. There was also evidence of enteritis. All the other organs were healthy. The mass was adherent to the upper part of the sacrum, bound down by the dense fibrous mass outside the bowel.

Had colotomy been performed this was eminently a case in which life might have been considerably prolonged; inasmuch as the disease was quite local and circumscribed.

The parts submitted for examination consisted of a piece of the sigmoid flexure or upper part of the rectum, and at its lower part a mass of new growth to which the ovary was adherent. The bowel was tightly strictured by the growth, and the canal was only 4 millimètres in diameter. The drawing, Plate 3, shows this, by a transverse section made through the growth. The muscular coat above

the stricture was somewhat hypertrophied. The mucous membrane of the bowel at the entrance to the stricture was infiltrated with new growth, and presented a flat, rather warty-looking surface of ulceration, with slightly elevated edges. A transverse section of the stricture shows : (a) A mass of indurated tissue outside the bowel, to which the ovary is adherent. (b) A thickened muscular coat. (cc) Infiltrated submucous tissue. (d) A tumour of mucous membrane. (e) The size of the canal.

Under the microscope the disease showed itself to be a columnar epithelioma which has infiltrated the various coats of the bowel, and extended even to the outside peritoneum. But, as was often the case in these growths, the disease beyond the confines of the wall of the bowel was of a very tough fibrous nature and although the ovary was adherent and looked large, it was not evidently diseased, when examined by the microscope.

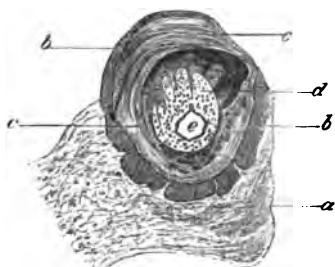
The examination therefore proved, what at first sight there might be a little doubt about, that the disease was one of the intestine and not of the ovary.

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March 20th, 1882.

THE PRESIDENT (Mr. Francis Mason) exhibited a man, aged sixty-eight, whom he had shown to the Society in 1876. The patient was under Mr. Mason's care at St. Thomas's Hospital in 1874 for myeloid sarcoma of the septum nasi. He underwent three operations: in the first the growth was removed through the anterior nares with the ordinary polypus forceps; in the second, performed three weeks afterwards, the tumour was taken away by an incision made down the side of the nostril so as to raise the ala. In the third, undertaken three months afterwards, the removal was effected by carrying the knife in the line of the cicatrix left at the previous operation, and dividing the upper lip in the median line. As the tumour had invaded the upper lip a portion of its inner surface was excised. The patient had remained well, and the Fellows could see for themselves that he was perfectly well now. Mr. Mason took the opportunity of referring, as he had done on the previous occasion, to another patient photographs of whom (before and after operation) he showed. The case was one of melanotic sarcoma of the right cheek, which he had operated on in 1872. The

PLATE III.



- (a). Mass of indurated tissue outside the bowel binding it to the sacrum and ovary.
- (b). Thickened muscular coat of rectum.
- (c). Infiltrated submucous tissue.
- (d). Tumour of mucous membrane.
- (e). Size of canal.



submaxillary glands were so extensively involved that it was found impossible to remove all the disease, notwithstanding which the man had no recurrence whatever of the growth, and died in 1880, i.e. eight years after the operation, at the age of seventy-three, from some other complaint. His wife who supplied this information stated in a letter dated February 16th, 1882, that "he never found anything of his face from the time of its healing up."

Mr. BUTLIN would not draw too sweeping conclusions from such cases, many of which gave disappointing results, varying with the site and the tissue in which the tumour occurred. Central sarcoma of the bone, like the first related, was much less malignant than periosteal sarcoma. The second case was not parallel to the first; the glandular implication showed its carcinomatous nature. Instances had been known of enlarged glands subsiding after removal of malignant disease of the tongue; in some cases the injury done by the operation might set up inflammatory processes of salutary tendency in the glands.

#### ON THE TREATMENT OF CHRONIC DYSENTERY BY VOLUMINOUS ENEMATA OF NITRATE OF SILVER.

By STEPHEN MACKENZIE, M.D., F.R.C.P.

THERE are few diseases more unsatisfactory to treat than that chronic form of dysentery or dysenteric diarrhoea, which is left behind by an attack of acute dysentery, contracted abroad, or more rarely in this country. On this point there is an universal concurrence of testimony. At the London Hospital, from its propinquity to the river and docks, our opportunities of studying the disease are very considerable, and until recently I regarded it as one for which therapeutics could do but little. Time, and the favourable hygienic conditions by which patients were surrounded in the hospital, afforded some palliation, and drug treatment contributed perhaps in a minimal degree to the relief of the patient's suffering. At the Seamen's Hospital, Greenwich, where are enjoyed even better opportunities of watching the disease and of trying various plans of treatment systematically and on a large scale, the experience of treatment is equally unfavourable. The late Dr. Harry Leach\* wrote: "The resources of the Pharmacopœia have, I believe, been fully and fairly tried in the Seamen's Hospital: diaphoretics, astringents (vegetable and mineral), calomel, castor oil, ipecacuanha (simple and compound), and a host

\* 'The Practitioner,' Dec., 1870.

of other so-called remedies, have been prescribed, as well as opiates, blisters, suppositories, and enemata; and it has been agreed by Dr. Ward, the senior physician, and others who have had medical experience in this institution, that failure has been the rule rather than the exception. Four years ago, having treated upwards of two hundred cases of dysentery, I ventured to record that those who lingered the longest, or at length got well, are those with whom therapeutics have little or nothing to do." Dr. Ward, whose opinion is here quoted, elsewhere writes,\* that "special remedial agents, if of little use to control or cure the disease, render important service in the relief of distressing symptoms. An occasional dose of castor oil, guarded by laudanum, or an injection of gruel with oil, will bring away scybalaous faecal matter that may have caused annoyance for some time." Dr. Ralfe, now my colleague at the London Hospital, in a very valuable paper† has given his experience at the Seamen's Hospital, to which he was, at the time of writing, physician, especially with reference to the treatment of chronic dysentery by small and repeated doses of castor oil, alone or in combination with other medicaments. His results, as stated in the above paper, which is a model of clinical record, show an improvement upon his predecessors' experience, but leave room for very considerable advance. Sir Joseph Fayrer,‡ than whom nobody has enjoyed greater, or better used, opportunities of studying dysentery in all its forms and shapes, said in his recent Lettsomian Lectures: "Medicines, no doubt, are at times of great service, but recovery depends more on hygienic measures and proper food than on drugs. Many patients linger for months or years, and succumb at last. The lesions in the bowels are never repaired," Probably all present have had patients invalided home from India or elsewhere for dysentery, and their experience will concur with the authorities I have quoted and with my own. Any plan which promises to render our treatment more useful will doubtless, therefore, be welcomed and submitted to the practical test of experience. It is with this object I propose to bring under your notice a mode of treatment I have been using for some little time past, and to give you my experience of all the cases (not very many in point of number, it is true) that I have treated in this way.

\* 'On some Affections of the Liver and Intestinal Canal,' p. 156.

† 'The Lancet,' Feb. 14th, 1880, p. 241.

‡ 'Med. Times and Gaz.,' March 12th, 1881, p. 286.

Before proceeding to describe and discuss the treatment in question it will be desirable to glance, for a moment, at the morbid condition which has to be corrected, and we shall then be in a better position to form an opinion as to what treatment will be most likely to succeed. Without entering into nice pathological distinctions we may speak of dysentery as an inflammatory condition of the large, and in some cases of the small, intestine, leading to ulceration and destruction of the mucosa and thickening of the submucous coats. As we see such cases on the post-mortem table we find a greater or less extent of the mucous membrane of the colon irregularly ulcerated, islands of swollen mucous membrane between serpentine ulcers with thickened edges, or an uneven surface of slate colour with puckered cicatrices. Large patches occur destitute of proper glandular constituents, and the mucous membrane that remains shows under the microscope great changes. The epithelium is in an exaggerated condition of goblet cells charged with mucus, thus accounting for the large production of slimy excretions that characterise the complaint. It is generally observed that the ulcers are most marked along the rugosities of the mucous membrane, and, when the small intestine is the seat of the disease, along the valvulae conniventes. The disease is sometimes confined to the rectum and sigmoid flexure, sometimes limited to the cæcum. As a general rule the disease is of longest standing and most advanced towards the rectum, most recent and least advanced towards the cæcum; but this is by no means without exceptions. For all practical purposes we may regard the disease as an ulcerative colitis. I am aware, and have had post-mortem experience on this point, that in some tropical cases the bowel is not ulcerated, but is in an extraordinarily attenuated condition.

The effects of the morbid conditions of the bowel I have alluded to are to impair all its functions. Absorption is greatly hindered, and the peristaltic action of the bowel is diminished, or perverted and irregular, so that faeces pass on hurriedly mixed with mucus and blood, or concrete into scybala, which often attach themselves to the bowel, appearing to act like issues and to increase the mischief.

It will be conceded that remedies given by the mouth can have but little topical effect on a portion of the alimentary canal some twenty feet from the point at which they are introduced, and along the whole length of which they have to travel. Any power, whether

astringent, sedative, laxative, or alterative, such remedy possesses, has been dissipated and squandered on the comparatively unoffending tract of mucous membrane along which it has travelled before it reaches the part desired to be influenced. Remedies like opium, while they exert, through the nervous system, an influence on the movements, and perhaps on the secretions of the bowel, do not confine their action to the part affected. Laxatives like castor oil remove scybala and decomposing matters which collect on the irregular mucous membrane, and possibly do good by bathing the mucous membrane with the flux produced from the small intestine.\* Ipecacuanha appears to possess a specific influence, but its value is in acute dysentery and in the acute and subacute exacerbations which sometimes interrupt the course of chronic dysentery: in these conditions its value is unequalled.

In the treatment of ulceration of mucous membranes within reach of sight and touch, all practical physicians and surgeons are convinced of the great importance of local applications, whether the seat of the disease be the pharynx, the larynx, the eye, the cervix uteri, or elsewhere. In these situations, whether the ulceration be of constitutional or local origin, we employ local treatment, with or without internal medication, and as the results of treatment can be observed, no one doubts its efficacy. All practical surgeons are assured of the beneficial influence of applications of nitrate of silver and other mineral astringents and mild escharotics in treating inflammations of mucous membranes. How different is the treatment of dysentery from that of inflammation of the upper part of the alimentary tract. It may, of course, be remarked that treatment which is obviously beneficial to such parts as our hands can reach, cannot, on account of physical difficulties, be applied to the length of the colon. But this difficulty is not wholly real. With a view of rendering our practice in the treatment of dysentery more successful, and more in accordance with our procedures elsewhere, Dr. Horatio Wood, of Philadelphia, has suggested the use of large enemata of nitrate of silver, so as to bathe with a solution of this salt the whole mucous membrane of the colon. This treatment he has appropriately designated "the rational treatment of dysentery."† I am aware that enemata have long been employed in the treatment of dysentery, but the importance of *large* enemata has not been insisted on,

\* Ralfe, 'The Lancet,' Feb. 28th, 1880, p. 322.

† 'Philadelphia Medical Times,' Oct. 27th, 1877, p. 25.

and their use is not general. Ringer,\* Gairdner,† Bristowe,‡ Niemeyer,§ and others recommend the employment of enemata, and in some instances of nitrate of silver, but none enjoin the use of such large enemata of nitrate of silver as are recommended by Dr. Horatio Wood.

"The disuse of local applications in dysentery is largely, no doubt," Dr. Wood observes, "the result of our former inability to make use of applications to any other than the extreme lower portions of the colon. By the use of forced enemata, so-called, we are now, however, able to reach every part of the large intestine. In giving such injections it should be first remembered that the name is a misnomer ; that no force should ever be used. The patient should be brought to the edge of a hard bed, placed in a position somewhat resembling that for lithotomy, his buttocks resting upon a hard pillow in such a way as to elevate the pelvis, and cause the injected fluid naturally to flow downwards and inwards. A well-oiled, smooth, somewhat flexible, hard tube, with openings at the side (an oesophageal tube will answer well) and a closed end, must then gently and slowly be introduced from eight to twelve inches into the rectum. The free outer end of this may be connected with a Davidson's syringe, and the fluid thus be slowly pumped in. A better plan is to unite it with a flexible indiarubber tube, in the end of which a funnel is inserted. This being elevated five or six feet, the water is poured in, and by its own weight, with irresistible gentleness, forces its way into the gut. Instead of a funnel being used, the tube may be so arranged as to empty a bucket or other reservoir of water, placed five or six feet above the patient. A direct connexion may be made, or the principle of the syphon taken advantage of. Finally, the so-called fountain syringe may be substituted.|| In any case the liquid should be about the temperature of the body, so as not to provoke peristalsis by the stimulus of heat or cold."

Dr. Wood writes that whilst some considerations would lead us to expect that variety in the character and strength of the applications would be likely to be serviceable, his experience of throat affections led him to select nitrate of silver in the first instance, and he has

\* 'Handbook of Therapeutics,' sixth edition, p. 55.

† 'Clinical Medicie,' p. 661.

‡ 'Theory and Practice of Medicine,' third edition, p. 642.

§ 'Text-book of Practical Medicine,' American trans., revised edition, 1876, p. 674.

|| Leiter's apparatus for injections will be found the most serviceable.

been so satisfied with its results that he has employed no other. Drachm doses have, in his hands, never occasioned constitutional symptoms, and less than forty-grain doses have not accomplished much good. In one of my own cases, to be narrated, a single enema of thirty grains of nitrate of silver, in three pints of water, caused the complete cessation of chronic dysentery that had lasted two years. This I regard as exceptional. I believe that, as a rule, at least a drachm of nitrate of silver to three pints of water should be used, and I have employed as much as a drachm and a half of nitrate of silver to this quantity of water with good result and without danger. Dr. Wood properly discusses the possible effects of the application for a longer period than occurs elsewhere, of so large a dose of nitrate of silver to an absorbent surface, but has never seen the least inconvenience arising from it. My experience is in entire accord with his. He suggests that, in case of the enema being retained, and fear arising as to the toxic effects of a large dose, a solution of common salt should be at hand to inject and neutralise the nitrate of silver. In two cases, in my absence, my house-physician thought it desirable to do so.

I myself have been led to try perchloride of iron instead of nitrate of silver, as the former would be wholly destitute of the dangers entailed by the use of the latter, and any absorption which took place would be an advantage rather than the reverse. But my results have not been nearly so good with iron as with silver. I have not experienced any practical difficulty, inconvenience, or the least danger with these large and comparatively strong injections of nitrate of silver, whilst the results have been so encouraging that I am anxious the treatment should be tried on a larger scale, and by other observers. It will, of course, be understood that this plan of treatment is not suitable for diseases of the intestine above the ileo-cæcal valve.

I will now relate all the cases I have treated by this method.

CASE 1.—A. C.—, aged twenty-seven, a sailor, was admitted into the London Hospital on September 11th, 1878. Ten years before, when on shipboard at Calcutta, he had dysentery; and his bowels were never regular from that time. In May, 1878, whilst in China, he had pneumonia, followed by a second attack of dysentery. This left a condition of chronic dysentery with occasional acute outbursts; the last one occurred a month before admission, when at New York. On admission he was wasted and anaemic, had a listless look, and complained of weakness, loss of spirits, a feeling of fulness after food, and diarrhoea,

the bowels acting three or four times a day. He was treated with small doses of opium and rest in bed. He passed on Sept. 14th two motions; 15th, four; 16th, three; 17th, four; 18th, three; 19th, three; 20th, three. On the 21st an enema of one drachm of nitrate of silver to three pints of tepid water was given. The injection returned after a short interval. On Sept. 22nd the patient passed two motions, firmer and not so large; 23rd, two; 24th, one; 25th, one; 26th, one; 27th, two; 28th, one; 29th, one; 30th, one; Oct. 1st, one; 2nd, one; 3rd, one; 4th, one; 5th, one; 6th, two; 7th, two; 8th, none; 9th, one. From this time until his discharge on Nov. 18th, his bowels generally acted once, occasionally twice a day. His recovery was retarded by an attack of gastric catarrh. When discharged, he was made an out-patient, his motions were then properly formed, and he was entirely free from pain. As far as I know he had no relapse.

CASE 2.—D. J.—, aged thirty-eight, a sailor, has visited most parts of the world, but had no illness until the present, the commencement of which occurred at Hong Kong nearly two years before admission. It began with moderate severity, but continued during his voyage to San Francisco, where he went into hospital, and so far improved that his bowels acted only four or five times a day. In this state he remained until his admission into the London Hospital, Jan. 11th, 1879. He then had pain and tenderness throughout the course of the large intestine; abdomen distended and tympanitic. He was very weak and wasted. Tongue tremulous, but not red. His bowels were open upon the average five times a day, unless he walked about much, when they acted more frequently. Was ordered fifteen minimis of the tincture of perchloride of iron three times a day, one drachm of cod-liver oil twice a day, five grains of compound powder of ipecacuanha night and morning; and a flannel bandage was applied round the abdomen. On Jan. 13th patient had five motions, mucoid and bloody; 14th, five; 15th, four; 16th, four; 20th, four. (On this day he had an enema of perchloride of iron, three drachms of the tincture to three pints of tepid water).—21st: Four motions; less pain, but still some blood.—22nd: Three. For the first time since the commencement of his illness the patient slept throughout the night without the bowels acting.—24th: Three motions, fair sized, semi-solid, with trace of blood. No motion in the night. Enema, as before, repeated.—29th: Three motions, still trace of blood; less pain; feels better.—Feb. 1st: Three motions, semi-solid; no blood.—12th: Three motions; trace of blood; enema repeated. Has had middle diet up to now; to have nothing but milk.—15th Had an attack of pharyngitis, which passed off in a few days. Temperature 102°.—17th: For the first time in nine months has defecated once only in the twenty-four hours. The motion was slimy.—18th: The motion to-day consists of two hard lumps and a little bloody mucus.—21st: No blood or mucus in stools.—25th: Has a bearing-down pain, and his motions are again more liquid. On this day I noted, "Since Feb. 12th patient has had no food whatever, except milk. During this period his bowels have acted on an average about once a day. The motions have been semi-solid, slatish-brown from iron, sometimes with, sometimes without, mucus. He has been free from straining. To-day he feels weak and depressed, and his bowels have acted three times in the twenty-four hours, with a good deal of straining. Pulse 117; temperature 100·8°. He complains much of cold in his extremities. His tongue is coated, and rather

tremulous. The abdomen is not remarkably distended; there is tenderness on pressure in the left hypochondrium, over the descending colon, and slightly over the ascending colon. The colon rises slightly in the right hypochondrium. He is wasting."—26th: Seven motions; much bearing down.—27th: An enema of nitrate of silver (one drachm to three pints of tepid water) administered. The whole returned in about ten minutes. He felt no pain, and passed a good night subsequently. The bowels were moved three hours after the injection. There was no tenesmus then, and there has been none since.—28th: Bowels not moved for eighteen hours.—March 1st: One motion in twenty-four hours.—4th: Two; bearing-down pains have left him. Is cheerful, but still losing flesh.—13th: Nitrate of silver enema, as before, repeated. Half only came away in about thirteen minutes, so an injection of chloride of sodium was given. He felt a little sick and faint during the operation.—16th: No motion for thirty-six hours; the last was nearly formed.—25th: Bowels moved, after being confined for two days and a half. Allowed bread in addition to milk.—April 2nd: Bowels not moved for two days.—4th: Allowed minced meat.—6th: Allowed to get up for two hours daily.—10th: Allowed to be up half the day.—16th: Pudding added to dietary.—19th: Bowels moved five times; motions liquid and dark; no blood. No cause for diarrhoea discovered.—20th: Two motions.—21st: None.—May 3rd: Bowels open once daily; motions well formed; no bearing down at stool or pain. Is still weak. Allowed a chop.—May 17th: Improvement maintained. Sent to the country. At the end of a month he returned to show himself. His bowels were acting naturally, the motions solid and well formed. About a year later he presented himself again, having been to sea in the meanwhile. He came, not for himself, but to bring a messmate afflicted with dysentery. He told me his health had been good since leaving the hospital, and that, though exposed to the exciting causes, he had had no further attack of dysentery. This case was a very serious one, and the disease had lasted nearly two years. He was wasted and extremely weak on admission, and did not benefit in the least by the rest in bed, or from the Dover's powder and iron taken internally. Large enemas of perchloride of iron effected trifling good, but it was not maintained. A purely milk dietary, moreover, did not suffice, in conjunction with the other measures, to arrest the flux. The effect of the first nitrate of silver enema when the patient was worn out with the disease and, in my opinion, in serious danger of losing his life was immediate and striking. A second enema sufficed to cure the disease that had lasted so long and brought him so low. It is instructive, too, to note that after the nitrate of silver enemas the return to a solid dietary occasioned no recurrence of the diarrhoea.

CASE 3.—R. C., aged twenty-nine, under my care at the London Hospital for haemato-chyluria, contracted in India two years and a half before admission. Dysentery developed when he was under treatment in the Calcutta Hospital for the above complaint. He passed slimy motions, with but little blood, about six times in the day, and nearly as many times in the night. The condition had lasted unabated during the voyage home, continued after he came to this country, and persisted for more than a month whilst in the hospital, the treatment not being directed against this symptom. On Feb. 10th, 1880, it was noted: "The condition of his bowels produces much discomfort. He has to go

to stool about eight times in the day and four times in the night. The motions are partly formed and coloured, with a good deal of slime, and occasionally a little blood. Their passage is attended with a good deal of straining." On Feb. 13th an enema of half a drachm of nitrate of silver to three pints of tepid water was given. A subsequent note says: "Since the enema was administered the bowels have acted once, and occasionally twice, in the twenty-four hours, and he has never had to get out of bed during the night. The motions are solid and well-formed, free from mucus and blood. He remained under treatment for the chyluria, but the dysenteric diarrhoea was entirely removed. The patient took a chop and plenty of mixed food daily throughout the treatment. Here a single enema of half a drachm of nitrate of silver cured a condition which had lasted two years and a half.

CASE 4.—C. S., a Norwegian sailor, aged twenty-three, was admitted on July 7th, 1880. He contracted dysentery on the voyage home from the East Indies in the previous February. Bowels acting about five or six times daily, on admission. Motions reddish-brown, with foul odour; separate into liquid and semi-solid layers. There appeared to be some membranous shreds and a good deal of mucus in the stools, and a few pieces of solid faeces (scybala). Treatment: milk and beef-tea diet; ten grains of Dover's powder twice a day.—14th: Since admission bowels have acted from four to six times in the twenty-four hours. As a rule there is no pain, but now and then there is a little griping. If the patient does not strain at stool no blood passes. This morning's motion of light colour, partly solid. To take, instead of the Dover's powder, twenty minims of dilute sulphuric acid and one ounce of the decoction of logwood, twice a day.—24th: Patient a little better. About three motions daily, in which is no blood; six minims of the tincture of opium added to mixture.—August 11th: Patient now passes two motions a day. Motions are liquid and painless, unless scybala are present, when there is straining. No blood, and stools not so offensive. Has occasional griping pains. Has remained, as regards the bowels, in a stationary condition for some time, but has gained three pounds in weight during last week. An enema of half a drachm of nitrate of silver in three pints of tepid water administered. Returned in five minutes, without pain.—13th: No effects from injection; state as before.—21st: Yesterday an enema of one drachm of nitrate of silver to three pints was given, because the motions were becoming looser, and accompanied by slight griping pains. The injection gave but little pain. A hypodermic injection of morphia was given to ensure a good night's rest. He passed a tolerably comfortable night, and now has no pain.—24th: Since injection bowels have been moved twice daily. The motions are still loose, but of lighter hue. There are no scybala and no blood. He had slight griping this morning.—25th: Bowels moved once this morning; motion fluid, with a few scybala. An enema of one drachm of nitrate of silver.—26th: Bowels not opened last night, and only once this morning; motion fairly solid, more so than any previous one; no blood; no pain.—31st: Enema of nitrate of silver, one drachm to three pints. Motions more solid; no blood; no pain. Feels he is gaining strength.—Sept. 4th: Enema of nitrate of silver, a drachm and a half to three pints.—6th: Is not improved. Bowels open twice a day; motions not more solid than formerly; no blood.—13th: Nitrate of silver enema, a drachm and a half to three pints.—16th: Remains the

same. Bowels open once a day; motions still loose.—20th: The longest time patient has gone without his bowels acting is forty-eight hours. Since last injection has had only one solid motion. Motion passed today, liquid, of natural colour; no blood; no pain. Enema of nitrate of silver, a drachm and a half to three pints, given. After this last enema the patient improved, the motions becoming more solid. He was made an out-patient on Sept. 25th, and remained under my observation some time without having any serious relapse. This, though not severe, was a very intractable case. The influence of the injections was less marked, but the stronger ones eventually and gradually arrested the disease.

CASE 5.—U. W.—, a Finn sailor, aged twenty-six, was admitted July 13th, 1880. He contracted dysentery at Zanzibar in April, which continued unabated until he came to the hospital. On admission, bowels open about twelve times a day. Stools liquid, mixed with blood, dark-brown, containing scybala. A good deal of tormina. Ordered twenty minims of dilute sulphuric acid with one ounce of the decoction of cinchona three times a day; milk and beef-tea.—July 17th: Motions loose and bloody; a good deal of griping pain.—20th: Ten grains of Dover's powder twice a day.—22nd: Much griping pain along the course of the colon; bowels open twenty times during the last twenty-four hours. Much blood and mucus.—23rd: Fifteen motions in twenty-four hours, contain much blood and mucus; no scybala.—26th: Thirteen motions; much blood and pain, which are restrained by subcutaneous injections of morphia.—August 5th: Enema of thirty grains of nitrate of silver to three pints of tepid water given last night. As it did not return in a few minutes an injection of chloride of sodium was given. This last caused much pain, which was relieved by a hypodermic injection of morphia. This morning he says he feels much better; has no pain in the abdomen or rectum. Bowels have acted once this morning, in all four times since the injection. To have pudding.—10th: Bowels now move twice, and occasionally three times, in twenty-four hours; no pain. Taking cocoa and two eggs.—18th: Pain in region of the navel. Bowels opened eight times, motions dark reddish-brown, mixed with blood.—21st: Enema of one drachm of nitrate of silver, preceded by soap-and-water enema. Returned quickly, and not accompanied by much pain. Bowels opened nine times.—25th: Bowels open two or three times a day; one motion solid.—28th: Motions were becoming quite solid, but yesterday after pain they became as liquid as at commencement.—31st: Enema of nitrate of silver, one drachm to three pints. During the night several liquid motions, some containing blood.—September 3rd: Bowels moved once this morning, the first time for twenty-four hours; motion firmer but not solid, no blood. To take one ounce of the quinine mixture three times a day.—4th: Enema of nitrate of silver, one drachm and a half to three pints.—8th: Bowels act once a day, motions more solid.—11th: Bowels act twice, motions loose, no blood; some pain. Enema of nitrate of silver, one drachm and a half to three pints, ordered.—16th: Bowels open only five times since injection, i.e. in six days; motions solid. Feels his strength returning rapidly.—21st: Enema of nitrate of silver, one drachm and a half to three pints, preceded by a soap-and-water enema.—27th: Bowels open five times yesterday. The motions have become loose, and to day he has passed a considerable quantity of blood.—30th: Not feeling so well.

Motions semi-solid, about three a day. To have ten grains of Dover's powder.—October 2nd: Enema as before, not retained more than two minutes.—6th: Enema repeated, not retained more than one minute.—9th: Enema repeated.—13th: Enema, returned immediately and caused pain.—17th: Enema, pain prevented by hypodermic injection of morphia.—25th: Since last injection bowels moved three times in twenty-four hours; stools fairly solid and free from blood.—31st: Enema repeated. Mixture of quinine and iron, one ounce three times a day. Has gained five pounds in weight during the last fortnight.—November 5th: Bowels acted twice daily.—26th: Motions have been very solid lately, only one during the last thirty-six hours. December 8th: Bowels act regularly once in twenty-four hours.—23rd: Bowels confined. Olive-oil enema and an enema of starch and opium (fifteen minimis) every morning.—January 17th, 1881: Made out-patient to-day. Bowels since beginning of December opened only once a day. Has not passed blood for three weeks. Motions rather hard, and in consequence painful. Temperature normal for many weeks. Has gained 1st. 2lb. since admission. This case, it will be seen, was the most intractable of the whole series, and only yielded after repeated injections. The injections caused more pain in this than in any other, but the pain was subdued by simultaneous injections of morphia subcutaneously. Defecation was painful when the faeces became formed, but a daily enema of starch with a very small quantity of laudanum relieved this condition. The patient remained under my care as an out-patient for some weeks without any relapse.

To summarise the results I have detailed I have placed them in a tabular form.

Cases.	Duration of disease previous to treatment.	Number of injections.	Duration of treatment.	Result.
1	5 months*	1	8 weeks	Cure
2	2 years	2	11 weeks	"
3	2½ years	1	Effect immediate	"
4	5 months	7	6½ weeks	"
5	8 months	12	23 weeks	"

A few words on dietetic and some other points in the management of cases of chronic dysentery may not be considered out of place. The constant drain of fluid from the system, and the disturbance of the mucous membrane of the alimentary canal, render the latter almost incapable of performing its natural functions. We may gain some idea of the condition of the mucous membrane of the stomach and small intestine from the appearance presented by the tongue in many of such cases. It becomes red and shiny, smooth and bald, owing to imperfect development of the epithelium and

\* Also previous attack.

papillæ. It is very important with mucous membranes in such a state to give food that is most easily assimilated. Milk, with or without admixture with lime-water, beef-juice, and beef-tea should alone be given in severe cases, and in the most extreme form of gastro-intestinal irritability peptonised milk, gruel, or beef-tea. In the cases treated with large nitrate of silver enemata, it will not, as far as my experience goes, be usually necessary to restrict the diet to the same degree as in cases otherwise treated. When there is pain along the colon, small doses of Dover's powder, two or three times a day, will be useful. Patients with dysentery, acute and chronic, are very susceptible to cold, and exposure to cold often occasions a relapse, in the same way that it determines an acute primary attack. It is important therefore to keep the patient in bed, in a chamber of warm and equable temperature. It is especially necessary to protect the abdomen from cold. A flannel bandage round the abdomen, as employed for this purpose in the navy, has the double advantage of securing this result and giving support to the relaxed and enfeebled abdominal walls. Its efficiency is still further increased by rubbing into the flannel dry flour of mustard. I ought not to omit to mention that Sir Joseph Fayrer highly advocates the fresh bael fruit in cases of chronic dysentery. It can now be obtained from Squire of Oxford-street, in the form of a confection.

In conclusion, to recur to the points I wish to insist on:—

Dysentery, whether constitutional or local in origin, has its local expression in ulceration of the mucous membrane of the colon.

This ulceration is most efficiently treated, as ulceration elsewhere, by local applications.

The local applications most useful are enemata of nitrate of silver, large enough to come into contact with the whole of the affected mucous membrane.

*Poetcript.*—Since this paper was read Mr. J. H. Drew has informed me that twenty-five years ago, when on a ship, he landed a patient at the Mauritius suffering severely from dysentery. On visiting his patient a few days later he found him much better, and he was informed by the medical officer at the hospital that the improvement was due to enemata of nitrate of silver, a scruple to the pint, which they always used for the complaint. Of this solution at least two pints were injected.

The PRESIDENT asked whether the author recommended washing out the bowel before giving the enema.

Dr. CULLIMORE approved the method; he had used injections containing nitric acid. In a case treated in Burmah, of two years' standing, large injections of warm water were successful after the failure of other measures. Fried fish was of value as diet, and he had found good results from benzoin in acute dysentery.

Dr. ROGERS had found injections of charcoal and opium, with red gum given by the mouth, of great service.

Dr. DE HAVILLAND HALL asked whether the patients were urged to retain the enema. He had tried this treatment with children but with only moderate success, and had found extract of bael and confection of bael of service.

Dr. GILBERT-SMITH asked how long the enema should be retained, and whether the injection of perchloride of iron, retained by means of a sponge, would not be safer? It was a plan he had found to succeed in the diarrhoea of phthisis.

Dr. MACKENZIE, in reply, said he only washed out the bowel when scybala were present; that he spoke only of chronic dysentery; that in most cases the injection was returned at once; and the after-injection of salt, as practised in two of his cases, was unnecessary. The use of a sponge might incite harmful peristalsis.

## ATROPHY OF THE BRAIN IN IMBECILES.

By FLETCHER BEACH, M.D.

DR. BEACH mentioned that many writers speak of two forms of the disease. In the first, there is incomplete development; in the second, there is loss of nervous elements which had previously been present. Cases illustrating the first form are found fairly often in asylums for idiots and imbeciles, microcephalic imbeciles being instances of this class. The author pointed out that microcephaly may be general or partial. Some portions of the brain may be too small or altogether absent; he had seen the convolutions of certain parts much reduced in size from non-development, while the remaining portions were too large or normal. The occipital lobes are often arrested in growth in microcephalic cases and the corpus callosum may be shortened posteriorly or be absent. Usually, however, microcephaly is general and the deficiency consists in the smallness of the hemispheres. The author referred to two cases which he had related in the 'Transactions of the International Medical Congress' for 1881, in one of which the brain weighed 7 ounces and in the other 20½ ounces. He had since seen brains of similar cases which weighed 20½ and 24½ ounces respectively. The

cerebellum in microcephaly is relatively much larger than in the normal brain, often being in the proportion of one to three or four, the ordinary relation being one to eight. Illustrative cases of microcephaly were then given. The fact that the quality as well as the quantity of the brain was involved was mentioned, and sections were exhibited under the microscope showing that in these cases there is deficiency of cell processes, and retraction of protoplasm in the cell, so that spaces are left around the nucleus. The second form of atrophy was said to present itself in various forms, the most interesting being that in which there is atrophy of one side of the brain, usually the left, with coexistent atrophy of the limbs of the opposite side of the body. Examples of this form too are found in asylums for imbeciles. Van der Kolk's opinion that imbecility is not necessarily the result was referred to and it was shown that this kind of the disease seemed to be caused by chronic meningitis, or inflammatory processes in the cortical substance occurring before birth or coming on afterwards. Cases illustrating the disease were then related, and the measurements of the two sides of the body in one of them were given. The appearances usually found were said to be thickness of the cranium, opacity and thickness of the membranes, effusion of serum into the subarachnoid space and sometimes into the ventricles; with atrophy of one hemisphere, including the corpus striatum, optic thalamus and pons of the affected side, but with atrophy of the cerebellum and spinal cord of the opposite side. The course of events which produced the disease were mentioned, and the microscopical appearances of the cerebrum, cerebellum, and spinal cord as noticed by Drs. Major and Taylor were fully described. The paper was illustrated by brains, photographs of cases, and cranial outlines.

The PRESIDENT asked as to the influence of consanguinity, and whether in these cases the palate was arched, or the thyroid enlarged. Had the use of forceps during delivery any share in their causation?

Dr. GILBART-SMITH had seen two cases of deficiency on one side of the brain, with thinning of the skull. Was pressure of the skull tried as a means of diagnosis?

Dr. STEPHEN MACKENZIE said that the practical point was the mode of causation shown by Dr. Beach to consist in inflammation of the vascular parts of the encephalon, causing atrophy of the deeper structures. The stress of the lesion falling on the hinder parts of the brain, the seats of higher faculties, which are late in attaining their full development, suffer more from causes originating after birth than the earlier developed parts.

Dr. BEACH, in reply, said that only two per cent. of cases of imbe-

cility are accounted for by cousin-marriages. Though arching of the palate is found in these cases as well as in sane people, its presence may be taken to prove the cengenital nature of the state. Goitre is not always an accompaniment; in some cases fatty tumours occurred in the neck with or without goitre. Open sutures are found in some cases; therefore synostosis is not the cause of the lesion. The use of the forceps was not shown by recent observation to be a cause of imbecility; a prolonged labour was more dangerous. He had not seen any cases with thinning of the skull.

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*March 27th, 1882.*

#### A CASE OF LICHEN PLANUS AFFECTING MUCOUS MEMBRANES.

By H. RADCLIFFE CROCKER, M.D.

DR. RADCLIFFE CROCKER showed a case of lichen planus affecting the mucous membrane as well as the skin, and related the history of two others. The patient shown was a man, aged fifty-nine. The disease presented its usual characteristics upon the skin and upon the glans penis, but upon the tongue were symmetrical white patches on each side of the raphé, and on the buccal mucous membrane white streaks extending from the parts adjacent to the last molar teeth to the lips. The other cases related presented similar characters as regards the mucous membrane of the cheeks, but only affected the sides of the tongue; the most interesting point was that this condition of the mucous membranes preceded the skin lesions by some weeks in at least one of the cases. These white patches in connection with lichen planus were first observed by Sir Erasmus Wilson, but Mr. Hutchinson had called especial attention to them. Though only seen in a certain number of the cases, when present the symmetry of the patches on the tongue and the fern-like branching of the white streaks were the points especially noticeable. The possibility of their preceding the skin lesion gave them a diagnostic importance. Usually they did not require separate treatment.

The PRESIDENT had noticed similar patches, but had not identified them with lichen planus. Might not vulcanite tooth-fittings, or syphilis, have an agency in causing them?

Dr. STEPHEN MACKENZIE said the affection was more frequent in women than men. The white patches were not an essential element in the condition. There was good reason to believe that the female case was an instance of lichen planus, commencing on the mucous membrane. Arsenic was of benefit in these cases. He alluded to the occasional coincidence of leucoderma and lichen planus.

Dr. SANGSTER said that syphilis was a very doubtful cause of thickening of the oral mucous membrane. He believed these cases to be lichen planus.

Dr. H. STOWERS asked whether Dr. Crocker had seen Dr. Tilbury Fox's cases? In his experience the arsenical treatment was decidedly beneficial.

Dr. CROCKER, in reply, said that he had not seen the radiating, leaf-like, white patches on the tongue, except in cases of lichen planus. As regards causation, the female patient had no teeth in the neighbourhood of the white patches. He believed the disease was most common among women, and had not seen leucoderma associated with it. His first patient was treated by gentian and magnesia, with thymol locally. One patient of his could not take arsenic, but was treated with oil of pine locally. Such local stimulation was of use, with arsenic as an adjuvant when tolerated. Dr. T. Fox used inunction of olive oil and mineral acids internally.

Dr. ROBERT LEE exhibited an improved form of draft-steam inhaler, so constructed as to admit of the regulation of the temperature of the vapour according to the amount of air admitted with it.

#### A CASE OF LARGE PHTHISICAL CAVITY WITH ULCEROUS OPENINGS THROUGH THE INTERCOSTAL MUSCLES.

By T. GILBAET-SMITH, M.D., M.R.C.P.

F. P—, aged thirty-five years, a bootmaker, was admitted into the Royal Hospital for Diseases of the Chest on the 24th of November, 1881. He gave the following account of himself:

Up to Christmas, 1880, he had been healthy, but an attack of bronchitis then prostrated him and laid him up for five months. During his convalescence from this he suffered from pleurisy of the left side, which after a short time passed off. Ever since this attack cough with varying expectoration had been present, but never had he had haemoptysis. The severe cough and copious expectoration, combined with loss of flesh, increasing weakness, and night perspirations, led him to seek admission into the hospital

on the date above mentioned. His general condition showed considerable wasting and clubbing of the fingers ; the skin feverish with varying moisture. Pulse 120, respirations 44, shallow. Expectoration muco-purulent and profuse ; tongue furred, appetite poor. Bowels somewhat costive. Urine sp. gr. 1024, acid, no albumen. Weight 7st. 6lb.

Inspection of his chest revealed a contracted and flattened condition of the left side with much diminished expansion ; and during expiration the interspaces appeared to bulge, especially a portion of the second and fourth near the sternum. The right chest on a plane just below the nipple measured  $15\frac{1}{2}$  inches and the left  $14\frac{1}{2}$  inches. Over the whole left lung vocal vibrations were greatly diminished, most distinctly so just below the clavicle and at the posterior base ; over the same regions the percussion note was impaired and boxy, with complete dulness at the base. Upon the right side the note was fair. Over the entire left front bronchial breathing with here and there tubular and cavernous sounds were audible, the latter especially so over the areas of greatest expiratory bulging, while vocal resonance was diminished, and a few scattered crepitations were present.

On auscultating the left side posteriorly the breathing was bronchial in the supra-spinous fossa, but less markedly so towards the root of the lung ; below this it was feeble and tubular. At the base the voice sounds were distinctly ægophonic. Harsh breath sounds were everywhere heard over the right lung. The heart's apex appeared an inch below and within the left nipple, and but for a reduplication of the second pulmonary the sounds were normal.

From admission the signs on the left side gradually became more marked. The breathing was more cavernous, and over the upper part especially decidedly amphoric. Metallic tinkling and the bell sound were present with increased posterior basic ægophony.

An exploratory puncture was made below the level of dulness in the usual region, but no serum or pus was withdrawn. Over the right lung a few crepitations also appeared.

About a month after admission he complained of severe pain round the region where the interscapular spaces bulged ; which was much relieved by two-drop doses of the solution of sulphate of atropia. The expectoration continued abundant, and presented the ordinary muco-purulent character, but was never tinged with blood.

On January 16th he felt slightly better in the morning, but at

11.30 p.m. he was suddenly seized with violent haemoptysis and died in a few moments.

*Post-mortem.*—The autopsy made by Dr. Harper revealed the following conditions:—On reflecting the skin and muscles from the left side of the thorax, two perforations were exposed, passing through the second and fourth interspaces. Both appeared to open into the pleural cavity as though the lung had collapsed. After removing the sternum, &c., the lung was found bound to the chest-walls by adhesions, and these being broken down, the apparent pneumothorax was found to be an enormous cavity *in the lung*, occupying nearly the whole of it. The upper half had for walls the pleura, which was not much thickened, and a very thin layer of lung. The walls became thicker in the lower half of the lung. There was no distinction between the *lobes*, which appeared blended completely.

The inner surface of the cavity was crossed in all directions by fibrous bands, and dotted with small attached white nodules (<sup>P</sup> sealed up vessels). No blood-vessel appeared to open on the surface. A probe passed through the bronchus entered the cavity at various spots.

The right lung was hypertrophied and enlarged, full of blood; with tubercle-like masses in the upper lobes. No breaking down. Right lung = $22\frac{1}{2}$  ounces; left over 26 ounces.

Dr. Gilbart-Smith considered the case presented the following interesting features:—the extent of the cavity and its rapid formation, due largely in his opinion to the early occurrence of general adhesive pleurisy; the absence of haemoptysis, notwithstanding pneumonic destruction of such area, until the final outburst, which may, indeed, have occurred in the opposite lung; and the ulcerous openings through the intercostal muscles with the peculiar and rare physical signs observed in connection therewith.

Dr. STEPHEN MACKENZIE asked if fetor were present, and whether the characters of the walls of the cavity suggested gangrene. The infrequency of such perforations was due to the thick pleural adhesions generally met with over cavities. He attributed the bulging during expiration to the cavity being closed by a valve-like structure.

Dr. ISAMBARD OWEN, as illustrating the difficulty of diagnosis and the rapid growth of such cavities, referred to a specimen in St. George's Hospital Museum, of a large basic cavity which had been tapped in another hospital in mistake for an empyema.

Dr. GILBAET-SMITH, in reply, said the expectoration was profuse, but not fetid. He explained the bulging noticed to the yielding of the

weakened wall during expiration. He had recently met with a case resembling that mentioned by Dr. Owen, in which he believed a basic cavity was tapped in mistake for empyema.

## ON THE ADVISIBILITY OF ENUCLEATING THE AXILLARY GLANDS IN CASES OF REMOVAL OF SCIRRHOSUS MAMMÆ.

By A. PEARCE GOULD, M.S.

My object in this paper is to urge that in all cases where the mamma is amputated for cancerous disease the surgeon should remove also the axillary lymphatic glands. It is a cardinal rule in surgery, and very rightly so, that excisions of cancerous growths should only be undertaken when the surgeon can remove the whole of the diseased structures, and it is my desire to show that that rule applies to the case in point. Let me state at once that in all that follows I am limiting myself strictly to the one point named in the title of this paper, and that I assume that the cases of cancer of the breast removed are in other respects suitable for that operation, and that they satisfy the rule above quoted. For my purpose it will be convenient to divide the cases of cancer of the breast suitable for operation into : (1) Those complicated with evident enlargement of axillary lymphatic glands, and (2) those not so complicated.

1. *Is it right or is it wrong to operate for cancer of the breast where the lymphatic glands in the axilla are obviously enlarged from secondary cancerous growth?* The answer to this question depends upon the answers to two others : Can we safely remove cancerous glands from the axilla ? and, Does the cancerous infection stop at the lymphatic glands for so long a period that there is time for those glands to become distinctly enlarged before the malignant disease has been carried to, and grown in, internal organs ? The practicability of the operation must of necessity vary with individual cases. Where the glands are still freely movable it is easy to enucleate them ; where they are firmly fixed down to the chest wall, it is impossible to remove the whole of the diseased structures without serious risk, or even the certainty, of fatal injury to the thoracic cavity. Between these two extremes there are several grades of severity. But if we look at the dangers and difficulties of the operation, we shall best arrive at the true answer. By drawing the arm well away from the side,\* and

\* The arm should only be carried to a right angle with the trunk.

prolonging the mammary incision outwards, the axilla is easily exposed. The dangers are the primary ones of wound of the large bloodvessels and nerves, and wound of the pleural cavity. As the bloodvessels and nerves are very constant in their position the surgeon always knows where his danger lies, and even when the growths are adherent to these parts he can often, by slow and very careful dissection, separate them without wounding either vessels or nerves. The intercosto-humeral nerve, which crosses the axillary space, is most of all exposed to injury, and must be very generally cut or torn across. One common way of avoiding the danger of haemorrhage is to separate the mass to be removed, except at the end next the vessels, and then to throw a strong ligature around this pedicle, and cut the mass away on the distal side of the ligature. This is only a "surgical makeshift." It is far better, by care and patience, especially patience, to separate the growth all round. If vessels of any size are found entering it, ligature them separately. The disadvantages of the makeshift plan are, that the vessels in the pedicle are not so securely tied; nerves as well as vessels may be included in it; and there is no certainty that the surgeon has removed all the diseased tissues.

The secondary dangers of the operation are suppuration in the axilla, secondary haemorrhage, and thrombosis of the axillary vein. In my own experience these accidents have not occurred, and I have found these wounds in the axilla heal very well, if I took four precautions; to put a drain up into the cavity, to apply suitable padding to keep the walls of the cavity in apposition, to keep the arm fixed to the side, and to have the wound aseptic.

I may briefly relate one case of removal of cancerous axillary glands under my own care.

On Aug. 30th, 1880, I operated at Westminster Hospital on C. C—, aged fifty-one, who had a scirrrous tumour as large as an orange in the right breast, and enlarged glands in the axilla the size of an apricot. After removing the mamma and a large portion of the skin over it in the usual manner, I carried the incision up and out into the axilla, and first of all carefully detached the cancerous glands from the side of the chest; it was then found that they were not only adherent to but growing completely round the axillary vein and some of the nerves of the brachial plexus. I cut down through the mass on to the coat of the vein, and was then able to peel the glands off the vein and nerves, leaving them uninjured. Unfortu-

nately, before doing this I had put a ligature on the vein, as it at first seemed impossible to finish the operation without wounding it ; this precaution, however, proved to have been unnecessary. The external mammary and one small superficial artery were the only vessels ligatured. The axillary wound healed at once, except a narrow track occasioned by the silk ligature round the vein. I saw this woman last year. She was then well. I need not quote other cases I have had ; this was perhaps the worst of all. The only time I had any haemorrhage was once when I wounded the subscapular vein close to its junction with the axillary ; it was easily secured with a ligature, and caused no further trouble.

As to the second question, I think all will agree that there is often an interval of many months between the discovery of cancerous infection of the axillary glands and the appearance of signs of cancerous disease in the internal organs. But the facts I would adduce in support of this statement are these :—(1) That systemic secondary cancer, without antecedent glandular infection is very rare, being met with in only about 13 per cent. of such cases. (2) That in cases of death from cancer of the breast, infection of the glands is met with far more frequently than infection of any other organ. Thus, in 128 autopsies, the glands were found cancerous in 115 cases, and the liver, which stands next in order of frequency, was infected only fifty-five times ; the lung twenty-eight times ; and then comes a great fall to units. What is the meaning of these facts but that the path of the cancerous poison from the breast is through the axillary-lymphatic glands, and that the poison is delayed in its passage through these glands, often for a long period ? Hence, on pathological grounds, this operation is justifiable. Practically, it is a safe procedure, not adding greatly to the risk of the simpler operation, and clinically it is successful ; for out of ninety-three cases tabulated by Oldekop and Winiwarter, in which this was done, the mean subsequent life was 39·3 months. And Gross states that in as many as one-third of the cases submitted to a complete operation—*i.e.* clearing out the axilla —no recurrence was observed up to so long as six years afterwards.

2. *Is it right, or is it wrong, when operating for cancer of the breast, in which no lymphatic enlargement can be detected, to remove the axillary lymphatic glands?* Practically this is a very simple procedure. A very small extension of the wound allows the finger to be passed into the axillary space, and with it the glands can be readily enucleated, without danger to nerves, vessels, or pleura. Or,

what is much to be preferred, a careful dissection of the axilla can be made. The small twigs of alar thoracic vessels, which are necessarily divided, are not large enough to require any treatment. A small drain should then be put in the axilla and the wound treated as already mentioned. Such a procedure hardly, if at all, adds to the danger of the original operation. But is it of any advantage? I believe it is, for I believe that in the very earliest stage of lymphatic infection it is impossible to detect any enlargement of the glands by the ordinary examination through the skin. Such a case occurred to me quite lately. A patient was brought to me by my friend, Dr. Shaw of Enfield, with a scirrhoue cancer in the right mamma. Neither I nor Dr. Shaw, nor Mr. Macnamara, who afterwards saw the case with me, could detect any lymphatic enlargement. But after excising the mamma I, as a matter of routine, proceeded to remove the axillary glands, and then I found that two of them were evidently already cancerous, in one the focus of disease being about the size of a shot, in the other of a pea. My friend, Dr. Heneage Gibbes, has prepared some microscopical section of those glands, which prove the cancerous nature of the growths. Now here was convincing proof that had I simply contented myself with excising the mamma, I should almost directly have found a recurrence in the axilla, and this one case was sufficient to convince me that cancer may exist in axillary lymphatic glands which cannot be detected by the ordinary methods of examination. The only other explanation is, that had I used proper care and skill I should have detected these minute growths. To which I can only reply, that I examined the axilla repeatedly and with care, and that if I made an oversight so did Dr. Shaw and Mr. Macnamara, and therefore it is an oversight that may be expected to be made. Further, recurrence in the axillary glands, apart from local recurrence, is not uncommon after removal of the mamma alone. And recurrence in the axilla is far more frequent after removal of the breast alone than when the glands are simultaneously removed. The axillary glands are not of functional importance at the age when cancer occurs.

In conclusion I would formulate my argument thus :

1. Partial excision of a cancer should never be performed.
2. Where breast and axillary glands are cancerous the breast alone should never be excised.
3. That in very many cases of cancerous axillary glands excision

can be performed with only slight additional danger, and with great benefit to the patient.

4. That the cases where such excision is not practicable are those in which the growth has spread to the chest walls. Pressure upon or even adhesion to the main bloodvessels and nerves of the axilla is not an insuperable bar to the operation, if sufficient care be taken.

5. That when no enlargement of axillary glands is to be made out, those glands may yet be infected with cancer, and that therefore—

6. Even when not evidently diseased, they should be removed at the same time as the diseased mamma, or, in other words, "*it is advisable to remove the axillary glands in all cases of cancer of the breast submitted to operation.*"

The PRESIDENT suggested that the word "necessity" should be substituted for "advisability" in the title of the paper. The difficulty was to carry it out in practice. In his experience cases of recurrence of cancer of the breast were rare. He seldom saw such cases again after primary excision.

Mr. EDMUND OWEN pointed out that the surgeon was often compelled to operate on scirrhoum mammae, and knowingly to leave implicated axillary glands behind, and it occasionally happened that glands which were enlarged before the time of operation subsided afterwards. All practical surgeons were agreed that the entire mamma should in every case be extirpated; that there must be no partial operations, and Mr. Gould had advanced this principle still further in advocating removal of glands, whether enlarged or not.

Dr. COUPLAND remarked that the principles laid down in the paper were borne out by morbid anatomy. Tissues apparently healthy to the naked eye might contain the germs of cancer, and some cases of long-delayed recurrence could only be explained on the view that the organs were infected at the time of the primary extirpation. A remarkable instance of this was brought before the Pathological Society, in 1873, by Dr. Murchison, where the patient died from recurrent sarcoma of the liver eight or nine years after the complete removal of the primary tumour in the orbit. Not a few instances occurred—*e.g.*, in cancer of the tongue and lip, as well as of the breast—where, after operation, no recurrence *in loco* took place, but ultimately recurrence in glands and internal viscera proved fatal.

Mr. PURCELL believed that the cicatrix left after enucleation of the axillary glands was a great source of subsequent oedema of the arm. Cases occurred of the subsidence of enlarged glands after removal of the primary cancerous growth. Such glands could not be cancerous, and it was important to know how to make the distinction between the two forms of enlargement.

A VISITOR remarked upon adhesion of the growth to the skin as a test of the implication of lymphatic glands, and urged that in all such cases the lymphatic vessels as well as glands should be removed.

Mr. REEVES referred to the late Mr. C. Moore's practice, of commencing to operate on the axillary glands, and abandoning the operation

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if he found them beyond removal; and he also alluded to Professors Billroth's and Gross's practice. He had seen many cases of local and distant recurrence; and, on the other hand, he knew of five cases which had lived from five to seven years after operation without recurrence.

A MEMBER said he had often seen cases of recurrence after excision of the breast, and had seen good results from a second removal. He agreed with Mr. Gould's dictum, and differed from Mr. Purcell as to the ill effects resulting from removal of axillary glands.

Mr. BLACK alluded to a case under Mr. John Wood's care, of recurrence in the rectum ten years after removal of the breast.

Dr. CULLIMORE mentioned a case of recurrence after seven years.

The PRESIDENT knew of a case under Sir W. Fergusson, where the cancer recurred fourteen years after primary removal.

Mr. GOULD, in reply, said that operations for cancer were of value even when recurrences in internal organs occurred, as the distress caused by such growths was so much less than that of the external growths. He would always remove enlarged glands from the axilla when possible, and the case he had related, in which the glands were found to be cancerous, but were not so to the naked eye, had deeply impressed him, and he had recently met with another similar case; so that he would in future clear the axilla of glands, whether enlarged or not. Even if in a few cases innocently enlarged glands occurred, no harm could be done by removing them.

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*April 3rd, 1882.*

## SYMMETRICAL LOSS OF THE UVULA AND SOFT PALATE.

By FRANCIS MASON, F.R.C.S.

Mr. F. MASON (President) exhibited a woman, twenty-three years of age, who showed a remarkably symmetrical deficiency of the uvula and part of the soft palate, with very little evidence of cicatrisation; and he suggested that possibly it might be a case of congenital defect, although the patient was the subject of syphilis.

Mr. BRYANT had little doubt that the whole affection was syphilitic, though it was very rare to see the effects of ulceration so symmetrical.

Mr. O. COLES suggested that the symmetry was probably due to the ulceration having occurred in early life.

Mr. MASON, in reply, stated that he was not prepared to assume the syphilitic origin of all ulceration about the palate even in the subjects of syphilis.

ON CASES ILLUSTRATING THE "*COAT SLEEVE*"  
METHOD OF AMPUTATION.

By RICHARD DAVY, M.B., F.R.C.S.

THE author stated that his method was a modification of a very old operation, introduced by Cheselden in 1720. In operating, Mr. Davy forms an integumentary sleeve varying in length from three to five inches, and dissects the superficial from the deep fascia, turning skin over skin until sufficient length of skin flap has been gained; he next divides the muscles and soft parts, and saws through the bone; vessels are then twisted or ligatured. The skin sleeve is then tied up by passing two ends of a tape through a cylinder, and fixing the ends with a safety pin. Mr. Davy's cases had all healed well without any dressing. He pointed out the comparative uselessness of any other structures but skin, fat, and hypertrophied areolar tissue for making an efficient pad for the end of the stump. Three cases of this *coat sleeve* method of operating were read before the Society, and one case exhibited.

One case of amputation of the thigh was performed on March 8th, 1881; one of the leg on August 16th, 1881; and the last, on October 11th, 1881, was necessitated by reason of an ununited fracture of the tibia and fibula. All the stumps were good examples of results gained by the operation, viz., a depressed central pin-point cicatrix with good fat radiating skin creases around; making by involution of the cicatrix, a circular cushion on which a very heavy weight could be supported. Mr. Richard Davy considered that the probable advantages gained by the *coat sleeve* method were:

1. The conservation of an abundance of skin, subcutaneous fat, and areolar tissue, which by mechanical arrangements are utilised, so that the scar is reduced to a minimum, and the cushions to a maximum.
2. The total abolition of sutures, which are invariably painful on removal. Sutures as previously applied in a circular amputation necessitated a linear cicatrix on the face of the stump.
3. The facility granted to the house-surgeon for restraining, and to the patient for escaping, secondary haemorrhage.
4. Freedom from pain, exclusion of air, and easy application of drainage.
5. The symmetrical appearance, and utility of the stump.

Mr. E. OWEN asked how Mr. Davy applied drainage in these cases.

Mr. BRYANT said the question of drainage was the important one. The stump shown was a good one, but not better than could be obtained by other means, and the secret of its excellence was the length of the skin flap. He preferred to use sutures to the method of closing the wound suggested by Mr. Davy.

Mr. PYE asked if any signs of gangrene had been noticed in either of Mr. Davy's cases beyond the encircling tape.

Mr. MASON asked if the method were applicable to all parts of the body.

Mr. DAVY said that a drain could be easily inserted through the flap. In one case the skin beyond the tape became blue, and he loosened the tape; gangrene was to be avoided by careful watching. It was applicable, but not equally so, to all regions.

## GASTROSTOMY FOR CANCER OF THE OESOPHAGUS.

By T. BRYANT, F.R.C.S.

Mr. BRYANT read the particulars of a successful case of gastrostomy for cancer of the oesophagus, with remarks on the value of a small opening into the stomach.

It was in a gentleman, at. 65, who had been ailing for some months and treated for dyspepsia. He had been gradually losing strength and emaciating, and with the exception of milk, all food was regurgitated. A local examination of the oesophagus revealed a stricture near its lower end through which nothing could be passed.

Gastrostomy was performed on Dec. 3rd, 1881, according to the method suggested by Mr. Howse. The first step of the operation was performed in the usual way as described by Mr. Bryant in the 'Lancet' for April 9th, 1881, and the second step on Dec. 10th. No single bad symptom appeared during the progress of the case, and the patient, when the paper was read, i.e. four months after the operation, was convalescent and about. [He died on May 2nd from exhaustion, but free from pain.]

Much of the well-doing of the case was due to the care bestowed upon the after treatment by Mr. Palmer Stephens of Emsworth.

Mr. BRYANT remarked that he had brought the case before the notice of the Society, not only to place it on record as a good illustration of the advantages of gastrostomy as a remedial agent for cancer of the oesophagus, but to press upon the attention of surgeons the propriety of adopting, whenever possible, the judicious practice suggested by his colleague Mr. Howse, of dividing the operation

into two stages, as well as of making a very small opening into the stomach for feeding purposes.

He said he had followed these lines of practice in three consecutive cases and in all with success. One patient lived for sixty days after the operation, and died from visceral disease. The second patient was alive and well twenty months after the operation, and the third, the present case, was living in comfort four months after he had submitted to the surgeon's skill. He then described the two steps of the operation and pointed out the advantages in the second of making a small wound. Indeed, he said that in all the three cases he simply punctured the stomach with a tenotomy knife one eighth of an inch in width. In all three the opening was large enough to admit a tube the size of a No. 10 catheter for feeding purposes, and elastic enough to close when the tube was withdrawn, so as to prevent any escape of the contents of the stomach to keep the patient wet and the wound irritated. In the two first cases, the wound after the operation was always dry, and in the third there was only escape when much water was injected into the stomach.

The feeding apparatus which Mr. Bryant used was then described and shown. It was made by Mr. Krohne, of 8, Duke Street, Manchester Square, and consisted of a small Higginson's syringe so constructed as to be readily cleaned, with one tube to be introduced into the stomach, and the second to be connected with a glass funnel as a receptacle for food. With this simple apparatus, thick food can readily be injected into the stomach.

Mr. Bryant also stated that he had found great benefit in the treatment of the case from the nutrient suppositories as made by Messrs. Slinger of York, and sold by Messrs. Newberry of Farringdon Street.

In conclusion he advised that gastrostomy for cancerous stricture of the oesophagus should be undertaken as soon as there is a practical difficulty experienced in the deglutition of solid food; life being prolonged by such a practice, since the progress of the cancerous disease is retarded, and much misery is saved; that the operation should always be divided into the two stages as suggested by Mr. Howse; and that the opening into the stomach for feeding purposes should not be more than one eighth of an inch.

Mr. HENRY MORRIS pointed out that Mr. Maunder used to advocate dividing the operation of enterotomy into two stages, and so first

enunciated the principle which Mr. Howse applied to gastrostomy. He thought the curved incision along the margin of the ribs a great improvement, as there was less risk of opening the stomach near the pylorus.

Mr. BEYANT stated that he had learnt from Nélaton the plan advocated by Mr. Mauder and Mr. Howse.

## THE CARLSBAD WATERS AND THE INDICATIONS FOR THEIR USE.

By Dr. HOFFMEISTER, of Carlsbad.

THE number of patients there (in Carlsbad) has risen in the last ten years from 12,000 to 27,000.

The curative effects of Carlsbad water in certain diseases are chiefly due to the chemical constitution of its springs, and not to the other sanitary conditions of a watering place.

At first the mineral waters of Carlsbad were only used in the form of a prolonged bath, till the skin was bereft of its epithelium.

The chemical condition of all the springs is identical; there being a difference only with regard to the temperature and to the content of free carbonic acid.

The last chemical analysis (1880) gives in 16 ounces about 42 grains of solid constituents, namely sulphate of soda 18 gr., carbonate of soda  $10\frac{1}{2}$  grs., muriate of soda 8 grs., carbonate of lime 2 grs., sulphate of potass 1 gr. carbonate of magnesia 1 gr., siliceous earth 1 gr., further small quantities of carbonate of iron, manganese, phosphate of alumina and lime, fluoride of potassium, iodide and bromide of sodium, and traces of boracic acid, lithium, rubidium, cæsium, and arsenic.

The "Sprudelsalt," which was for some years unequal in its constitution with regard to the amount of carbonate of soda it should contain, is now carefully prepared, and contains the normal percentage of the three chief salts; sulphate of soda 44 per cent., carbonate of soda 6 per cent., and muriate of soda 1 per cent.

In addition, a new "Sprudelsalt" of Carlsbad is prepared according to the method of Professor Ludwig of Vienna, containing all other substances of the mineral water, excepted the earthy carbonates, the oxides of iron, and silicic acid.

The *mineral baths* and the *mud baths* take a share in the curative effects of Carlsbad.

After enumerating the physiological actions of alkaline waters in general, and of Carlsbad waters in particular, Dr. Hoffmeister stated upon the basis of these pharmaco-dynamic powers, the indications for the use of the waters in the following diseases :—

1. *Catarrhus ventriculi chronicus*, whether genuine, idiopathic, or a consequence of diseases of the heart, lungs, kidneys, &c., or attending *dilatation* of the stomach.
  2. *Sensitive gastroneurosis*, with lack of appetite as the only symptom.
  3. *Motor gastroneurosis* both in its hyper- and akinetic forms.
  4. Functional abnormalities of the stomach with *excess of acid*.
  5. *Abdominal hyperæmia* from any cause.
  6. *Chronic intestinal catarrh*.
  7. *Jaundice* derived from gastro-duodenal catarrh, from gall-stones obstructing the ductus choledochus, or from tough thick bile.
  8. *Hyperæmia hepatis*, and the first stage of fatty degeneration.
  9. *General obesity*, when no far-advanced fatty degeneration of the heart exists.
  10. *Kidney diseases* with large formation of uric acid.
  11. *Gout* in all its forms.
  12. All cases where a mild *diuretic remedy* is desirable.
  13. *Acute and chronic rheumatism of joints*. Recommended by Dr. Ludwig of Teplitz ; Dr. Hoffmeister has no experience of his own.
- Contra-indications* of Carlsbad waters. 1. In all cases, where the blood is saturated with alkalies (*phosphaturia*). 2. In liability to congestions and hæmorrhage (aneurisms, atheroma, &c.), on account of the heat of its springs. 3. Pregnancy with liability to abortion.

April 17th 1882.

Mr. ROYES BELL showed a case of Gunshot-wound penetrating the clavicle and lung, the ball lodging in the muscles of the spine, having, it was surmised, passed between the subclavian artery and vein.

## A CASE OF SUPPURATION IN THE HIP-JOINT OF AN INFANT.

By EDMUND OWEN, F.R.C.S.

THE patient in the following case is, from many considerations, of great interest. She has been the subject of acute suppuration in the hip-joint, from which, under active treatment, she has recovered with absolute completeness, there being no stiffness even at the articulation; she has only just completed the first year of her age. The history of her case affords a fitting appendage to those knee abscesses which were shown at the Society at the beginning of last year, and which were reported in the '*Lancet*' of Feb. 12th, 1881.

On Nov. 16th last, the mother brought the little sufferer to me with the following history:—About a week since, her baby, who was then seven months old, was, with other members of her family, the subject of chicken-pox; and during the progress of this disease it was noticed that whenever the baby was moved, or the left foot was touched, she screamed and was evidently in great distress. The doctor who was in attendance (so the mother says) attributed the pain and restlessness to "wind in the stomach," for which, during the next two or three days, a course of fomentations was adopted; but this had not the effect desired. Indeed, in spite of it, the disease, whatever it might be, was gathering force. At this time the mother happened to notice a swelling at the upper part of the thigh as she was washing the child, and on showing it to the doctor he at once remarked that there was disease going on in the hip, and, telling the mother that it must necessarily be a long case, he advised her to apply at the Children's Hospital in Great Ormond-street, where the child became an out-patient on Nov. 16th last, as I have before remarked. The doctor's diagnosis was correct; indeed, there was no room for doubt. The thigh was firmly and rigidly flexed upon the abdomen; to attempt to rotate it was greatly to increase the child's distress. The skin about the tender part was neither red nor heated, but there was a marked fulness in the gluteal region. The child had had but little rest, or care for food during the previous week. The diagnosis there and then written upon the prescription sheet was "acute effusion into the left hip-joint."

It is quite possible, in view of the free movement which the limb

now possesses, some surgeons may be inclined to question the correctness of my diagnosis—to doubt if the hip-joint was either then or at any subsequent time the seat of abscess. Might not the suppuration of which I am about to speak have been peri-articular, or even simply sub-fascial? My reply is that the abscess *was* in the joint, and for these reasons:—The severity of the local and constitutional trouble; the flexed and rigid condition of the thigh; the pain caused by jarring the leg or foot. The infant was not the subject for treatment by a stirrup and weight, so we contented ourselves with bandaging the feet and legs together (in order to obtain the nearest approach to rest for the diseased joint), and in prescribing a carminative mixture. And, if I may trust my memory, I would say that the thigh was poulticed.

On the third day, when I saw the patient again, she seemed to be a little better; but I told the mother that unless there were a decided improvement by the time of her next visit I should be compelled to do something to give relief. Four days subsequently, when the child was next brought (that is, a week after our first interview), there was no improvement. An attempt to bring down the thigh gave evident and intense pain, and was accompanied by the characteristic arching of the loins. Still, although there was great fulness, there was neither redness or heat of the surface. Mr. Kempe administered chloroform, and when the child was fully under its influence we found the thigh as rigidly flexed as ever. A fact is this of equal interest and importance. With a small scalpel I punctured the skin just above and in front of the great trochanter, and then, putting the knife away, I thrust a director deeply down in the direction of the articulation. This allowed the eager escape of pus; and to ensure the complete evacuation of the abscess the closed blades of a pair of dressing forceps were directed into the cavity, and were withdrawn widely separated. Much pus was voided, and then the abscess cavity was thoroughly washed out with warm water coloured with tincture of iodine. After this operation the limb came down almost straight. A good-sized drainage-tube was introduced into, and a pad of carbolised tow was firmly bandaged over the hip, and for the next few days, and then at increasing intervals, the child was brought to the Sister, who syringed out the cavity as I had done. A rapid convalescence at once set in, and each time I saw the child the limb was found capable of more movement.

There are four points which, I think, specially deserve considera-

tion. The first is, What was the cause of the rigid flexion of the thigh? The others are—How, When, and Where should the surgeon open a hip-joint that is the seat of acute suppuration?

My explanation of the cause of the rigid flexion of the thigh is that it is, at any rate at first, the direct result of effusion into the synovial membrane. The condition may be imitated easily enough upon the cadaver by injecting fluid into the articulation by a perforation made into the acetabulum from the pelvic side. Contraction of the psoas, the adductors, and certain other muscles, may take place subsequently, in order that the joint may be kept in the condition of least tension—that is, of flexion. If the flexion were due simply to reflex irritation of the muscles supplied by the obturator nerve, we should have been able to have effaced it by the influence of an anæsthetic, for surely the contraction of ten or fourteen days would not have rendered the muscles permanently shortened.

Secondly, How should a hip-joint abscess be opened? The orthodox answer to this question is, I suppose, "Under the spray." But with this little child as a witness for the defence I do not mind laying myself open to accusation when I say that joint abscesses need not its sheltering influence provided that attention is given to the following indications:—That the opening into the abscess is free, that adequate drainage be ensured, that the cavity be kept washed out clean, that the limb be maintained at rest, and that at the earliest moment the surrounding tissues be subjected to what Gamgee calls "soothing surgical pressure."

Next, When should a hip-joint abscess be opened? I am inclined to say, "As soon as the presence of pus is diagnosed;" the more acute the symptoms the greater the need for decisive action. Why, I would ask, are we so prone to adopt the Fabian policy when dealing with hip abscess? Is it because we are in the habit of seeing articular collections of pus become absorbed? Or is it because our hip-joint abscesses generally leave us so extremely unsatisfactory a result of treatment? If the latter, does not the very admission seem to indicate the advisability of an earlier interference?

Lastly, Where should the abscess be opened? To that I would answer, "Through the line of least resistance," and, from the frequency with which Nature opens such an abscess near to the front of the great trochanter, I would suggest that the surgeon should work down, inwards and backwards, in front of the tensor fasciae femoris, and reach the swollen capsule in front of the anterior borders

of the middle and small gluteal muscles. Employing the scalpel for dividing the skin only, he may proceed with the use of the director and dressing forceps without subjecting the divisions of the external circumflex vessels to serious risk of injury.

The PRESIDENT said the points of interest were the use of the spray and the age of the patient operated on.

Mr. BLACK thought that greater benefit might possibly have been obtained by subcutaneous puncture in an earlier stage.

Mr. GANT thought it was better not to attempt antiseptic treatment unless it could be carried out completely. He agreed with the diagnosis. He would open the abscess behind the trochanter rather than in front. He had treated two cases of effusion into the knee-joint (in adults) in a similar manner without antiseptics, following up the puncture by firm pressure.

Mr. BRYANT also concurred in the diagnosis. The good results depended on early opening, the seat of which was indicated by the pointing of the abscess. In Mr. Owen's case an antiseptic—iodine—was used, and he objected to the restriction of the term "antiseptic" to the spray system.

Mr. OWEN said there was no pointing of the abscess at the time he operated. The treatment of hip-joint disease was different from that of knee-joint disease, in the fact of its external signs being so much more marked. He insisted upon the necessity of a large free opening.

#### A NEW METHOD OF TREATING RECENT SIMPLE TRANSVERSE FRACTURE OF THE PATELLA.

By EDWARD LUND, F.R.C.S. (of Manchester)

On the assumption that the chief, if not the only, cause of non-union in such cases is imperfect apposition of the broken fragments, so that actual contact of the osseous surfaces is not attainable;—Mr. Lund has adopted this plan: For the first six or eight days the limb is kept extended on a back splint with foot-piece, and slightly raised; cold evaporating lotion or ice is applied to the knee until nearly all effusion within and external to the joint has subsided. Then, while the patient is under the influence of an anæsthetic, a strong steel pin is drilled through each portion of the patella, from the external to the internal border, a small hole being made in the skin by the entrance and exit of the pin, great care being taken by the mode in which the patellar fragments are pierced that the point of the screw pin does not injure the articular surface of the bone. These screw pins, which should be placed as nearly as possible in parallel lines, are next drawn very closely together until the broken surfaces of

the bone are brought into perfect contact by means of a double screw instrument which, for the time, holds them firmly in position ; while so placed the ends of the pins are enclosed in a coil of very thin copper wire, so arranged in repeated turns as to gain great strength, and then, when the pins are completely fixed, the double-acting screw instrument is removed, the broken surfaces of the bone remaining in absolute contact. Mr. Lund demonstrated the method very clearly by using the knee-joint from an artificial leg in which the broken patella was represented by two pieces of cork kept apart by elastic bands and covered by a knee-cap to imitate the skin. He gave the particulars of two cases so treated with excellent results, and also a third case now under treatment at the Manchester Infirmary. Contrary to what might have been anticipated, these steel pins do not produce any local or constitutional disturbance, although retained *in situ* in the first case for thirty-seven days and in the second for forty-three days, when good (?) osseous union was obtained.

Mr. ADAMS believed that often even ligamentous union failed, and only a periosteal fibrous union took place. A true ligamentous union would not stretch to a greater extent than an inch. He had obtained fairly successful results with Malgaigne's hooks, getting very short ligamentous union ; and had never seen any ill results from their use, though such had occurred at King's College Hospital.

Mr. ROYES BELL said the patient alluded to by Mr. Adams was a middle-aged woman in broken health. Erysipelas set in round the punctures of Malgaigne's hooks, and suppuration extended into the joint, causing death. In a case of his where ligamentous union took place, the patella was subsequently fractured in another place, the ligamentous union remaining intact. In a case of double fracture one patella was treated with, and the other without, Malgaigne's hooks. The union obtained by the hooks was better than that without them.

Mr. H. MORRIS ascertained from Mr. Royes Bell that the fracture treated without Malgaigne's hooks was considerably anterior to the other, and he thought that this might account for the superiority of the latter. He asked what kind of union Mr. Lund believed himself to have attained. He believed a close ligamentous union to be superior to an osseous, and pointed out that the method advocated by Mr. Lister had been practised by other surgeons previously with success, and that Mr. Lister did not claim its invention.

Mr. B. SQUIRE thought Mr. Lund's rods would probably promote the formation of callus.

Mr. BRYANT would prefer Mr. Lund's method to that of opening the joint, if either was necessary. Mr. Lister only recommended his plan in apparently desperate cases, and in such rare cases he (Mr. Bryant) would prefer Mr. Lund's method. The ordinary methods, in his experience, had produced very good results, and some of the patients were able to follow the occupation of porters, bargees, &c. He pointed

out the risk of injury to the articular surface of the bone in Mr. Lund's operation, and had not a favorable opinion of Malgaigne's hooks.

Mr. LOCKWOOD advocated Mr. Manning's plan, as adopted at St. Bartholomew's Hospital.

Mr. GANT treated fractured patella by semi-circular pieces of gutta-percha placed round the limb above and below the patella, and kept in apposition by Malgaigne's hooks, aspirating the joint if much effusion was present. The interval between the fragments on leaving the hospital was about a quarter of an inch, and although it often became increased the utility of the limb was not lessened.

Dr. DOWSE suggested division of the rectus to aid the apposition of the fragments.

The PRESIDENT said he had found the results of the ordinary treatment to be satisfactory. In bad cases he had used a method of bringing the fragments together by pins.

Mr. LUND, in reply, said that Malgaigne's hooks were apt to cause tilting of the fragments. In one case he thought he obtained bony union. Very little irritation was caused by the rods, and no callus was induced. He would only use his method in recent fractures, and not in broken constitutions. Its advantage over Malgaigne's was that the former brought pressure to bear on hard tissues, and the latter on soft tissues liable to suppurative inflammation. He had seen very satisfactory results from section of the rectus muscle.

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*April 24th, 1882.*

### THE TREATMENT OF LUPUS BY ERASION.

By BALMANNO SQUIRE, M.B.

Mr. B. SQUIRE exhibited two cases of lupus vulgaris. One was a woman, aged thirty-five, in whom lupus commenced at the age of ten. The disease affected only the left cheek as a solitary rounded patch of three inches in diameter. Six years ago the patch was removed by erosion, which was repeated for slight recurrences; but during the past two years the disease had been completely absent. The other was a woman, aged twenty-seven, in whom lupus commenced at the age of eighteen, as a wedge-shaped patch on the right cheek. This was treated three years ago by erosion, followed by cauterisation with nitrate of silver. A large keloid growth resulted, and a thin disseminated lupoid infiltration of the surrounding skin appeared. Both the keloid and the lupus were treated by linear scarification several times repeated. The patient

had remained completely free from lupus for fourteen months, and no trace remained of the keloid.

\*  
REMARKS ON EPITHELIOMA AND ICHTHYOSIS OF THE TONGUE, BASED ON THE RECORDS OF SEVENTY-FIVE CASES.

By HENRY MORRIS, M.A., F.R.C.S.

Of 501 different persons suffering from cancer who applied at the cancer out-patient department of the Middlesex Hospital during the ten years 1872—1881 (during which it has been my duty to see the patients), 36 were afflicted with epithelioma of the tongue. The statistics communicated by Mr. Morrant Baker from Sir James Paget's practice\* show that of 500 cases of cancer, the tongue was the seat of the primary disease in 30. Of 520 cases of primary cancer tabulated by Mr. Sibley,† 14 were cases of epithelioma of the tongue. Thus out of 1521 cases of primary cancer, the tongue was the part affected in 80.

The classification of my own cases is as follows:

Breast . . . . .	258	Mouth . . . . .	5
Uterus . . . . .	111	Leg . . . . .	4
Tongue . . . . .	36	Jaw . . . . .	3
Axilla . . . . .	18	Groin . . . . .	2
Vagina . . . . .	18	Hand . . . . .	2
Chin and face . . . . .	10	Scalp . . . . .	1
Lip . . . . .	10	Penis . . . . .	1
Glands in neck . . . . .	8	Nose . . . . .	1
Scrotum . . . . .	8	Skin in mammary region .	2
Rectum . . . . .	8		
		Total . . . . .	501

The remarks which I am about to make on cancer of the tongue are based on 61 cases—viz. on the 36 referred to above as having come under my notice in the cancer out-patient department, and 25 others which have been under my treatment, either in hospital or private practice, during the years 1872—1881 inclusive. I have

\* 'Med.-Chir. Trans.', vol. xliv.

† Ibid., vol. xlii.

omitted none of which notes have been preserved, and as far as has been possible I have followed out the histories of the cases. Thus the cases are entirely unselected. I have grouped them into two series—viz. 1st, those which have undergone an operation for the primary cancer; and 2nd, those which have not. In each of these series I have specially stated whether the cancer was or was not known to have been preceded by ichthyosis of the tongue. I have also added a list of 14 cases of ichthyosis of the tongue and buccal and labial mucous membrane, in which cancer did not exist. These also came under my care during the years 1872—1881.

With these notes before me, one of the first questions which suggested itself was, "On what part of the tongue and in what manner has epithelioma generally begun?" Forty-nine cases afford an answer. It commenced :

1. As a small <i>ulcer, fissure, or crack</i> on the dorsum of the tongue, 4; on the tip of the tongue, 4; on right or left edge, 20 . . . . .	28
2. As an ulcer spreading from the floor of the mouth . . . . .	3
3. As an ulcer spreading from the pillar of the fauces . . . . .	1
4. As a pimple on the edge of the tongue, 5; on the under surface, 1; on the under surface and edge, 1 . . . . .	7
5. As a blister on the edge of the tongue . . . . .	3
6. As a nodule in the substance of the tongue . . . . .	5
7. In general soreness, a feeling of rawness, with more or less fixity of the tongue . . . . .	2
Total . . . . .	49

Thus, in no less than 20 out of the 49 the disease began on the edge of the tongue. This at once suggests what the patients' accounts in quite a number of instances corroborate—namely, that friction against a decayed tooth, or an irregular deposit of tartar, is a pregnant cause of cancer. To these 30 cases we may add those in which the disease started near the tip—a part of the tongue which on all its aspects is ever exposed to friction against the teeth—and also those in which the cancer commenced in the frænum. Indeed, it is only when the affection begins in such spots as a pillar of the fauces, on the inner surface of the jaw, or upon the floor of the mouth, that the teeth must be altogether excluded as a possible exciting cause of the cancer. This is a point to which surgeons, and surgeon-dentists alike, should be particularly alive. Many patients have been conscious of the irritation excited by a broken

or rough tooth, and when too late have pointed it out as a cause of the cancerous sore. One patient told me he had been in the habit of filing down the offending tooth ; but he had not commenced the practice in time to save himself from cancer.

That sufficient importance is not given to decayed, uneven, and tartar-coated teeth as a potent cause of cancer of the tongue, I feel convinced. I have had to insist, in the face of considerable opposition, on the extraction of a tooth which was causing irritation to the tongue, but which was itself sound. Any tooth which chafes or irritates the tongue of a person at, or beyond middle age, had best be got rid of as soon as possible. There are doubtless other local irritants which may lead to cancer of the tongue, but I do not believe that any is so frequent or so important as decayed or deformed teeth. Drinking and smoking (especially when the pipe or cigar is always held in the same place, or when the juice is constantly trickling from the mouthpiece of a very full-flavoured pipe) are considered to be exciting causes in persons with a tendency to epithelial overgrowth. Only nine, however, of the sixty-one patients described themselves as great smokers ; but many admitted to having smoked for many years, though in moderation. Some few admitted that they were, or had been, intemperate in the use of spirits ; moreover, some who regarded themselves as temperate, when questioned on the subject, stated that they generally preferred their beverages in the Scotch fashion—viz. the whisky first, and afterwards (perhaps) the water.

Smoking and drinking, it is said, conduce to ichthyosis, and thus indirectly to cancer. Out of 25 cases of tongue cancer, which I saw at a comparatively early stage of the disease, in 10 certainly (in 11 probably) ichthyosis had preceded the cancer. In some of these the ichthyosis was pretty general, the mucous membrane of the cheeks, lips, or floor of the mouth, as well as the tongue, being affected. In two of these cases, on the other hand, the ichthyosis was limited to a small area of the tongue, and the cancer began on the ichthyotic patch. The cases in the second series—viz. those not operated upon, show a much less frequent association of ichthyosis with cancer ; ichthyosis being noted in only 3 cases out of 32. This difference is probably due to the fact that many of the cases in the second table were not seen until great destruction of the tongue had occurred ; and as the description given by patients of the mucous membranes of their own tongues is generally worth-

less, nothing is known about its precancerous state. Probably, if some of these cases had been examined in the early stage of the cancer, ichthyosis might have been found. But whether this would have been so or not, we have here 13 cases out of a total of 61 in which cancer of the tongue was preceded by ichthyosis of the tongue. A proportion which proves how far from rare the sequence of these two morbid conditions is.

Syphilis is considered to be a frequent cause of cancer of the tongue. It is, I believe, the opinion of one distinguished surgeon that at least one-third of all the cases of cancer of the tongue are produced by prolonged syphilitic inflammation or ulceration of the mucous membrane. But syphilis is so common a disorder that it must of necessity be a frequent precursor of most diseases of advanced life. It is a little surprising, therefore, to find that in only 12 out of 58 cases was there a clear history of syphilis. In 10 cases it was absolutely, and I believe correctly, denied; whilst in 36 cases it was doubtful. Eleven of the thirty-six patients were women, and were classed as doubtful because only indirect questions were put to them; in some of the males venereal disease was confessed to, but constitutional symptoms were either denied by the patient or seemed uncertain.

*The duration of what may be called the period of latency of the cancer—i.e., the time which elapses between the first appearance of the blister or ulcer, or whatever form the initial stage of the disease may assume, and the time at which the disease begins to spread and to take on the characters of malignancy;* this time varies from zero to several years. In one case in Series I, the patient said that for a year or two he had had a sore feeling in the tongue, but could not detect either with his eye or his finger anything abnormal. At last a nodule was felt, and within three months it developed into an ulcerated mass as large as a walnut, and a gland on one side of his neck enlarged. In another case, Series II, the patient had a small sore on the tongue when she was between twenty-six and twenty-seven years of age, which she attributed to friction against a decayed tooth. For a long while before the sore appeared she had felt pain at the affected spot. For three or four years the sore continued unchanged, and then, within a period of nine months, the edge and dorsum of the tongue became ulcerated, and three large nodules of cancer, one the size of a walnut, had formed in the substance of the organ. In some cases there seems to be no period of latency, but the disease steadily increases from the first; in most

cases, however, the active stage begins from two to three months after the initial change sets in.

It is to be regretted that the pernicious practice of cauterising sores on the tongue is still freely practised. The histories of many cases show that it is quite the common thing for a sore on the tongue to be cauterised at short intervals over a considerable time after it has first attracted attention. Unless the characters of the sore and the history of the patient point exclusively to syphilis, I should not think it right to apply any kind of caustic to the tongue of a middle-aged or elderly person. Nor, indeed, have I seen the advantage of cauterisation in any form of ulceration of the tongue. A diet consisting only of bland and nourishing articles, restraint over the movements of the tongue, and tonics or arsenic will lead to the cure of all forms of ulceration of the tongue which are neither syphilitic nor cancerous. In syphilis I have had better results from rubbing a piece of blue-pill mass once or twice a day over the surface of the sore than from any other local application. In questionable cases, in which, for diagnostic purposes, anti-syphilitic or arsenical remedies are given internally, it is undesirable and unnecessary to employ any other topical agent than the mercury pill. Cyanide of mercury, nitric acid, the actual cautery, blue stone, and, worse than all, nitrate of silver, cannot, I think, be too strongly condemned in the treatment of doubtful ulcers in adults patients. If, after due attention to diet, restraint over the movements of the tongue, the avoidance of smoking and alcoholic drinks, and the removal of any decayed tooth, neither mercurials nor arsenic given internally and uninterruptedly for from two to three weeks, produce an improvement in a doubtful sore on the tongue of a middle-aged or elderly person, operation ought to be performed without delay.

In the case of Fanny P—, in Series I, the mode of commencement of the disease was peculiar. A small blister was produced by the friction against a decayed tooth, and the blister developed into a small abscess; five weeks later an ulcer followed in the same situation, and in the course of another month or six weeks a second and larger abscess formed, broke, and discharged three tablespoonfuls of matter and blood. From that time the cancer rapidly increased.

*As to the age at which persons are afflicted with cancer of the tongue.*—The oldest patient in my list was a woman aged seventy-eight years; the youngest was a woman twenty-five years old;

the next youngest was also a woman aged thirty years. One other patient was under forty years of age. In 1 case the age is not recorded. Nine were between forty and forty-five; 10 were between forty-five and fifty; 10 were between fifty and fifty-five; 10 were between fifty-five and sixty; 7 were between sixty and sixty-five; 6 were between sixty-five and seventy; 4 were between seventy and seventy-five. These figures confirm the statement that epithelioma of the tongue is a disease of middle and old age; a point of importance in forming our diagnosis of sores on the tongue. While cancer rarely attacks the tongue before thirty, it is the commonest form of disease of the tongue after forty. For this reason, I repeat, we ought to be most reluctant to apply caustic to any sore on the tongue of a middle-aged person.

*As regards sex.*—Forty-seven of the cases were males, 13 females. This is not quite so large a proportion of females as in Mr. M. Baker's statistics of Sir James Paget's cases, and in Mr. Fairlie Clarke's. In Sir James Paget's 30 cases 19 were males and 11 females. In Mr. Fairlie Clarke's 39 cases 28 were males and 11 females.\* Taking all these together the relative frequency of the two sexes is 1 female to every 2·6 males. It is thus evident that the sex of the patient ought not to influence us much in forming our diagnosis of a doubtful ulcer of the tongue. The assertion that cancer of the tongue is very rare in females is not borne out by the above facts. As compared with the same disease of the lower lip epithelioma of the tongue is quite a common disease in women.

*The duration of life in cancer of the tongue is increased by operation.*—In 15 cases submitted to operation, in which the full duration of life is known, the average length after the first sign of cancer was 16·5 months.

In 17 cases not operated upon, in which the full duration of life is known, the average was 10·5 months. Life, it thus appears, is prolonged six months by operation. It is clear, too, that this extension of life was due to the operation, and not to any advantage of age, in the persons operated upon. Of the 15 who underwent excision of the tongue five were over sixty, one being even more than seventy years. The average age was 53·4 years. Of the 17 not operated upon only 2 were over sixty, and the average age was fifty-two years. The influence of an operation on the duration of life is not, however, fairly gauged by these averages, because—(1)

\* 'The Diseases of the Tongue,' p. 179.

one fatal case of operation unduly lowers the average; thus the disease had only existed three months in the patient who died after being operated upon; (2) in a few of the cases an operation was performed merely as a means of relief and not with a hope of prolonging life, the disease having already made very great advances; and (3) because 6 other cases (not included in the 15) which were operated upon, but in which the full duration of life is not yet known, have lived for periods varying from one year to two years and seven months, from the commencement of the disease.

The advantage of any operation is, perhaps, better seen by looking at the cases individually. Thus, of the 15 cases referred to, 2 lived over three years, 2 others over two years, 1 other over eighteen months, and 3 others fifteen months or more; whereas, out of all the cases not operated upon, only 2 are known to have lived more than eighteen months, only 4 others fifteen months and over, and only 6 others over twelve months.

TABLE A.—*Complete Duration of Life in 15 cases which were OPERATED UPON.*

Case.	Duration of cancer.	Length of time between first operation and death.	Age at time of operation.
1	27 months	22½ months	43 years
2	7 "	5 "	61 "
3	36 "	31 "	50 "
4	25 "	16 "	49 "
5	3 "	9 "	71 "
6	6 "	3 "	46 "
7	12 "	9 "	42 "
8	15 "	6 "	35 "
9	15 "	11 "	67 "
10	8 "	5½ "	66 "
11	17 "	8 "	64 "
12	7 "	2 "	58 "
13	19 "	6½ "	42 "
14	41 "	32 "	54 "
15	10 "	5 "	54 "

*Average duration of cancer—16·5 months.*

*Average age of patient when operated upon—53·4 years.*

Of 6 other cases operated upon, in which the complete duration of life is unknown :

*1 was alive 2 years and 7 months from commencement of the disease.		
*1 was alive 2 years and 4 months	"	"
1 was alive 1 year and 9 months	"	"
2 were alive 1 year and 3 months	"	"
1 was alive 1 year	"	"

5 of these, including the two marked \*, are still living.

TABLE B.—*Complete Duration of Life in 17 cases which were NOT OPERATED UPON.*

Case.	Duration of cancer.	Age of patient.
1	6 months	54 years
2	6 "	42 "
3	11 "	69 "
4	14 "	52 "
5	8 "	48 "
6	13 "	45 "
7	4 "	58 "
8	15 "	49 "
9	7 "	60 "
10	9 "	25 "
11	13 "	64 "
12	11 "	50 "
13	14 "	45 "
14	6 "	43 "
15	12 "	52 "
16	17 "	55 "
17	13 "	78 "

*Average duration of life—10·5 months.*

*Average age of patient—52 years.*

Of cases in which the complete duration of life is unknown :

1 was alive 19 months after commencement of the disease.

2 were alive 17 months " "

1 was alive 13 months " "

There are besides other very great advantages afforded by an operation—viz. diminished pain, diminished salivation, increased facility of swallowing and speaking, and the cessation, for a time at

least if not altogether, of the disgusting odour and loathsome taste of the cancerous growth in the mouth, and the danger of swallowing the putrid discharges which are thrown off from it.

*Some observations on the relative value of different methods of excising the tongue* are suggested by these cases. I will confine my remarks to the cases operated upon by myself. Out of twenty operations performed on nineteen persons, *six* were done with the galvano-cautery écraseur, and in one of these the cheek was divided obliquely downwards from the angle of the mouth, after the method of Gant. *Seven* were done with the twisted wire écraseur, and in one of them also the cheek was divided; in two the tongue was first detached by scissors from the floor of the mouth: in two the twisted wire-rope was passed into the mouth through a supra-hyoïd incision, the incision in one case being made along the median raphe of the floor of the mouth, and in the other on one side of the raphe: in two the écraseur was looped round the tongue without any preliminary incision—the absence of bicuspid and molar teeth in one of these cases afforded ample room for operating upon the whole tongue, whilst in the other case it was only necessary to remove the anterior half. *Three* cases were done by the twisted wire écraseur after median division of the tongue: in two of these the disease was limited to one lateral half of the tongue; in the other case the whole tongue was removed in two lateral halves. *Four* were cutting operations, either the scissors or the knife being employed. In two of these the tongue alone was affected, and in one of these the lingual artery was tied previously to excising the diseased part; in the other the front half of the tongue was cut away with a knife after transfixing the tongue and holding it forward with two long needles, the haemorrhage being quickly stopped by torsion. In the other two cases the floor of the mouth as well as the under surface of the tongue was involved; in one of these the symphysis menti and lower lip were first divided, and afterwards the diseased tissues were freely removed with the knife; in the other case the diseased parts were freely cut away with scissors, curved at various angles so as to get well down behind the jaw, and Paquelin's thermo-cautery was used for checking haemorrhage.

The *average period of convalescence* in five of the galvano-cautery cases was 32·4 days. The shortest was 26 days, the longest 50 days. The sixth case died. The average period of convalescence of three cases in which the twisted wire écraseur was used after median divi-

sion of the tongue was 21 days. The shortest was 16 days, the longest 27 days. The average period of convalescence of five cases operated upon with wire-rope écraseur was 19·2 days. Two patients were well in 12 days; the longest period was 27 days. The sixth case operated upon with the wire rope quickly recovered from the wound of the tongue, but a supra-hyoïd fistula remained for one year. In the seventh case recurrence took place before the wound was healed. The average period of convalescence of three cases in which the disease was cut away was 16½ days. Two recovered in 14 days, the third in 21 days. In the fourth case the symphysis was divided; and though the mouth healed well the bone was not united until the end of the fifth month after the operation.

The amount of tongue removed does not affect the length of the period of convalescence. The supra-hyoïd incision should, I think, be avoided if possible. It is not at all requisite for drainage; the mouth can drain itself well enough without it, as we witness in salivation. The great objection to it is the length of time a fistulous opening is likely to remain. In one case it remained a full year; in another case it remained six weeks; in a third it probably never closed, as the disease rapidly recurred, and the patient died soon after leaving the hospital. The division of the cheek from the angle of the mouth is to be preferred when more room is wanted to get to the base of the tongue. This wound heals in a few days; it adds nothing to the risk of the operation, and the scar which results is but slight, and in men can be nearly hidden by the beard. The division of the symphysis is the most formidable and the least favourable mode of operating: it can but rarely be necessary, it is only when the mucous membrane on the inner surface of the jaw is affected and cannot otherwise be removed. In the case in which I divided the jaw the union was preceded by necrosis of the sawn surfaces, was thus long delayed, and was broken down again subsequently by recurrence of the cancer. This may be expected to happen in other cases, because when the floor of the mouth is originally affected the disease almost invariably returns in the tissues between the hyoïd bone and the lower jaw. I have for some time past quite discarded the galvano-cautery écraseur, with which I did most of my earlier operations. The slough which follows its use is more offensive; it is also more extensive, and hence the period of convalescence is longer. The cautery, too, is uncertain and irregular in its action, owing to the cooling action of the discharges upon the thin wire.

The median division of the tongue as a preliminary to the use of the écraseur, as advised by Mr. M. Baker, is admirable for cases in which the disease is limited to one lateral half of the tongue; but when both sides of the tongue are more or less affected, and nearly the whole organ has to be removed, it is not appropriate. It is then, indeed, an unnecessary complication. Moreover, when the median incision is carried back beyond the circumvallate papillæ there is free bleeding from the cut surfaces, which is not checked until the loops of the écraseur are applied.

It is impossible to say that any one method of operating is the best. The operation must be planned to suit the individual case, and the operator should be willing to vary his procedure to meet different conditions. The size of the mouth, the presence or absence of good teeth, as well as the position and extent of the cancer, are circumstances which require to be considered.

The procedure which, however, up to the present time I have preferred has been the twisted wire écraseur. Quicker recoveries have followed the use of the wire écraseur than any other operation I have performed. When used slowly, and held so that the wire-rope is kept in a line with the handle, there is no danger of the rope breaking. Hæmorrhage is seldom or never troublesome, and I have often seen the arteries drawn a long way out in the noose of the écraseur, so that they can be cut or twisted without a drop of blood escaping from them. When it is necessary, in order to apply the écraseur far back, to snip the front attachments of the tongue, the bleeding ceases on pulling the tongue firmly forwards; and if the écraseur be worked from the side of the mouth, so as to divide the tongue from side to side, and not from above downwards, there is little or no fear of the needles being dragged forwards through the tongue by the écraseur. The incision of the cheek greatly facilitates this method of holding the écraseur, and is sometimes absolutely necessary. The most important safeguard in the operation is a stout ligature passed through the root of the tongue behind the line of operation. By traction upon it this ligature not only assists in counteracting the tendency of the écraseur to drag the cheek needles forwards through the tissues of the tongue, but it prevents the stump from falling backwards over the top of the larynx. I have once or twice seen danger arise from want of this precaution; and in one operation which I witnessed the patient would most certainly have died had not a bystander, who happened to have a pair of

tongue forceps in his pocket, recognised the situation and instantly seized and drawn forwards the root of the tongue.

I have never operated by the Walter Whitehead method; but, having seen how quickly wounds heal after cutting operations on the tongue, I can quite understand why Mr. Whitehead's operation has so rapidly gained favour. When the whole tongue has to be removed I should certainly give his method the preference over the supra-hyoid operation or the division of the symphysis of the jaw. With the écraseur, however, there is less risk of haemorrhage, and quite as good a prospect of early convalescence; some, indeed, think a better. In cases in which the disease is quite confined to one lateral half of the tongue, the Whitehead operation is unnecessarily severe. If, however, the tissues across the median septum are at any part interfered with by the noose of the écraseur, there is risk of the tip sloughing. This occurred in one of my earlier cases; but it can be avoided by dividing the tongue along the median line before applying the écraseur. In one case, in which the operation was limited to one lateral half, the woman, after recovering from the operation, was occasionally annoyed by biting the remainder of the tip. In no other instance has any inconvenience resulted; on the contrary, patients have been grateful that one half of the tongue has been left uninterfered with.

The *mortality after operations* on the tongue is very slight, and does not amount to 3 per cent. Upwards of thirty-five operations were performed on the twenty-nine patients included in Series I., and there was only one death. The fatal case was an old man, seventy-one years of age, who died on the ninth day after the operation. At the post-mortem examination there was found a fatty heart and slight pneumonic congestion, but no lobular pneumonia or bronchitis. The patient simply sank, and died from exhaustion, the result of fatty heart and feeble circulation.

Septic pneumonia has been mentioned as a special source of danger after operations on the tongue, but it was not a frequent occurrence in the cases tabulated. Post-mortem examinations were made in twelve cases in the first series. In two cases where recurrence of cancer had taken place in the stump of the tongue, lobular pneumonia was found. In five other cases there was some pneumonic congestion of a portion of one or both lungs; but as in four of them recurrence was limited to the cervical glands and external parts, the condition of the lung was quite independent of any sore in the mouth,

Eight cases of the second series were examined after death, and the lungs were found to be affected in four.

In not a single case did either lobular pneumonia, gangrene, or pyæmic infarcts of the lungs arise in consequence of an operation; but in four cases out of twenty examined after death one or other of these pathological conditions was found associated with foul cancerous ulceration in the mouth. The œdema and congestion of the bases and back of the lungs in the other cases were only such as are commonly seen in those who have died slowly from other diseases.

Nor are the complications and accidents which retard recovery from operations either frequent or severe after operations on the tongue. Twice only has secondary haemorrhage occurred in my practice. Both patients were intemperate and had marked congestion of the surface capillaries. One in whom the haemorrhage recurred was sixty-six years of age and very excitable, and had arcus senilis and rigid arteries. The haemorrhage occurred on the fifth day, after the patient had been talking a great deal and had got out of bed. In one patient an abscess of the tonsil; and in another a deep abscess in the neck about half way between the lower jaw and clavicle occurred; but not until the tongue had healed and the patients were getting about. It must, I think, be allowed that in persons, otherwise sound, operation on the tongue for cancer may be made to be attended with but little risk. Providing the tissues behind the line of excision are secured by a stout ligature and kept well forwards, providing also that the back of the throat is kept clear by the assiduous use of small sponges on sticks or in long handles, and that if any bleeding occurs the head be kept well over on one side so as to allow the blood to escape from the mouth, there is no danger whatever from the operation itself. In the after treatment the two essential points are (1) feeding by the rectum, at intervals of not more than four hours, from the day of the operation until the time when plenty of nourishment can be swallowed; and (2) frequent and thorough irrigation, especially just before and after taking food through the mouth. Irrigation should be continued until the wound is quite healed.

In the cases in which secondary haemorrhage occurred I found half-drachm doses of liquid extract of ergot and the local application of styptic colloid quickly effective. The styptic colloid is admirably suited to check venous or capillary oozing; it tans the surface of the wound, causes little or no slough, and corrects the fetor of the

discharges. It is also very useful in cases in which no operation has been done.

Lastly, as regards *recurrence of epithelioma after excision of the tongue*.—In eight the disease recurred both in the glands and in the mouth. In eight (probably nine) in the glands; but not in the mouth. In five cases more than one operation was done on the same patient on account of recurrence in the tongue; but in only four had the disease returned in the mouth alone at the time of death. In four there has as yet been no recurrence. In three nothing is known as to recurrence. One patient died before there was time for recurrence. In six cases some enlargement of glands was detected prior to operation. In four of these the mouth did not again become affected; in one the mouth was again affected; and in one the gland has since remained unaltered, and there is no recurrence in the mouth. In two or three cases there were secondary deposits in the skin of the neck and chest and in the pleura.

The comparatively large number of cases in which recurrence was confined to the glands in the neck, and the very few in which it was confined to the mouth, stimulate the surgeon, on the one hand, to remove at the time of the operation on the tongue any glands about which there is the least suspicion of cancer; and, on the other, encourage him, whilst taking care in all cases to go wide of the disease, to limit his operation in suitable cases to the excision of a portion only of the tongue.

I have only in one case divided the lingual gustatory nerve. The patient was suffering agony and no anodynes gave him any ease. Though the glands in his neck were much enlarged he referred all his pain to the right side of his tongue and right ear and temple. The indication for the operation was therefore clear. Much relief from pain was secured, but salivation and sloughing of the tongue increased during the week following. The division of the nerve cannot often be called for, because if the glands in the neck are not affected or but little enlarged it would be better to excise the tongue; whereas if the glands are greatly enlarged the pain, unless clearly referred to the distribution of the third division of the fifth nerve, is probably caused by pressure on the nerves in the neck by the enlarged glands. Pain is often very severe when cystic formations take place rapidly in the cancerous glands, and may be quickly relieved by aspirating, or laying open the swellings.

In one case I ligatured both linguals, at an interval of a week, for haemorrhage from the mouth. In another the common carotid was tied for haemorrhage from an ulcer in the neck. When haemorrhage proceeds from the stump of the tongue, or from the floor of the mouth, it would be well, I think, to ligature the facials at their origin, as well as the linguals. This was indicated at the post-mortem of the case referred to.

#### ICHTHYOSIS OF TONGUE AND ORAL MUCOUS MEMBRANE.

There are fourteen cases of ichthyosis unassociated with cancer in Table III, and thirteen cases associated with cancer in Tables I and II. In sixteen out of the twenty-seven cases the tongue alone was affected, in seven cases the buccal mucous membrane as well as the tongue, and in four the buccal membrane but not the tongue. The characters of ichthyosis were not the same in all the cases. Three different clinical types of the disease may be described. First, the pearly white, or bluish-white tessellated variety, in which the surface is more or less delicately furrowed, and more or less smooth in appearance; though, when dry at least, it is generally harsh, if not actually rough to the finger. A considerable part of the anterior half or two-thirds of the dorsum is usually affected. This is the commonest form. For convenience it might be called the *smooth tessellated variety* (Plate I, fig. A). Secondly, the milky-white, raised plaque; varying in size from a split pea to a split walnut. It is harsh, even horny, to the touch when dry, though when moistened with saliva it may have a sodden appearance, like a piece of wet white kid glove. Either the papillæ may be enlarged, and the plaque appear to be formed by the papillæ, or the whole plaque may simply look like a very thick layer or layers of white epithelium. This is the form of the disease which has tempted some who have been the subject of it to shave it off from time to time. It may be conveniently called the *raised plaque variety* (Plate I, fig. A). Thirdly, a thick yellowish or yellowish-white fur overlies the largely hypertrophied papillæ; the papillæ are thickly set one against the other, and capable of being made to stand erect by the finger-nail; elsewhere the surface of the tongue may have the pearly-white and tessellated appearance. This may properly be called the *papillomatous variety* (Plate I, fig. B). These forms may be found separately, or together in the same individual (*vide* Plate I). Cancer may be associated with either form singly, or with all combined. In



#### **DESCRIPTION OF PLATE I.**

**FIG. A.**—"Smooth, tesselated" variety of ichthyosis on tongue.  
White, "raised plague" variety on buccal mucous membrane.

**FIG. B.**—"Papillomatous" variety of ichthyosis on tongue. Near  
the margins is also seen some of the "smooth, tesselated" variety.

An epithelioma of the lower lip, which was present in the same  
case, is also shown.

Fig. A.



Fig. B.





a case which I saw with Dr. Lediard (and therefore not included in the table), there was a large papillomatous tumour associated with the second or raised plaque variety.

*Antecedent habits.*—Each of the forms of ichthyosis occurs in those who have had syphilis, as well as in those who have not; in great smokers, as well as in those who have only smoked moderately or but little; in those who have drunk freely of raw spirits, as well as in those who deny having done so. In twelve cases syphilis had been contracted at some period varying from four to thirty years before the patient came under notice. In six there had been no syphilis. In the remaining nine syphilis was either not recorded in my notes or its occurrence is stated to have been doubtful. In several of the cases with a history of syphilis the ichthyosis was noticed within a year or two after the syphilitic infection. Eight patients confessed to excessive drinking, and some had been in the habit of taking raw spirits in large quantities, or perhaps it would be more correct to say in small quantities frequently. Nine were great smokers, and two are described as moderate smokers. The free drinkers were for the most part the great smokers. Six of the great smokers had also had syphilis; two of them denied having had this disease.

Thus it appears, though the sequence is not unfrequent, that ichthyosis is no more invariably preceded by a combination of syphilis and the habits of smoking and drinking, or by either of these conditions separately, than these conditions, separately or combined, are invariably followed by ichthyosis. Patients have occasionally attributed the ichthyosis to friction against a tooth, or to the pressure and friction of the plate of artificial teeth. I have seen in one instance (the case of a gentleman not included in the tables) in which the mucous membrane of the gums and floor of the mouth was the seat of ichthyosis of the raised plaque variety, epithelioma developed on the part against which a plate had rested; but the ichthyosis had preceded the wearing of the plate.

I have several times seen the smooth and the raised varieties of ichthyosis develop on the stump of the tongue after excision for cancer. In one of the cases which I formerly recorded,\* this had already happened; in the second of those cases it subsequently occurred. The same thing takes place on the mucous surface of

\* 'Brit. Med. Journal,' Feb. 21st, 1874.

other parts besides the mouth. I have observed it on the inner surface of the vulva after excision of an epitheliomatous ulcer. The patient was seventy-five years of age, and when the wound healed, which it did rapidly, there was on the cicatrix a raised white patch the size of a threepenny piece, which was typically like the so-called ichthyosis glossæ. There were one or two other patches on the lower part of the vagina, above the seat of operation.

In some of the persons who have had syphilis the ichthyotic condition is possibly the result of the cicatrification of superficial ulcers. Probably cicatrification after any form of ulcer or wound in persons of a particular tendency may produce ichthyosis of the part; and probably, too, this is more likely to occur in those who have a predisposition to epithelial cancer. I have not noticed that as a frequent occurrence the persons affected with ichthyosis have been gouty, rheumatic, or affected with arthritic troubles, as MM. Bazin and Debove have found.

When at Montpellier, last summer, I was struck with a drawing which looked like a representation of the smooth form of ichthyosis in a fissured syphilitic tongue. It was, however, intended to show the result of the changes wrought on the tongue by pellagra (Plate II, fig. B), a disease which, it seems, is little or not at all heard of in this country, but which is common in the district of Les Grandes Landes and Italy, and has been seen from time to time in several other countries of Europe.\* It is a disease which expends itself on the skin, the tongue, digestive tract, and the nervous system, and is attributed to a diet composed too exclusively of imperfect or blighted maize. As it affects the tongue, pellagra is an extremely aggravated form of the morbid changes which, in a slight degree, are brought about by simpler disturbances of the digestive functions.

*Sex.*—Probably one of the strongest arguments in favour of the opinion that smoking and spirit drinking conduce to ichthyosis is the great preponderance of males over females who are affected by it. Out of twenty-seven cases twenty-two were males; and one at least of the women had smoked for many years, and had also had syphilis.

*Age.*—The age at which ichthyosis commences is uncertain, but in several cases it was before the thirty-fifth year. The ages of the patients when they first came under observation varied from thirty-

\* Vide Dr. Rousset's works on Pellagra in France. Sir H. J. Holland wrote a paper on "Pellagra," which was published in the 8th vol. of the 'Medical and Chirurgical Transactions,' p. 315.

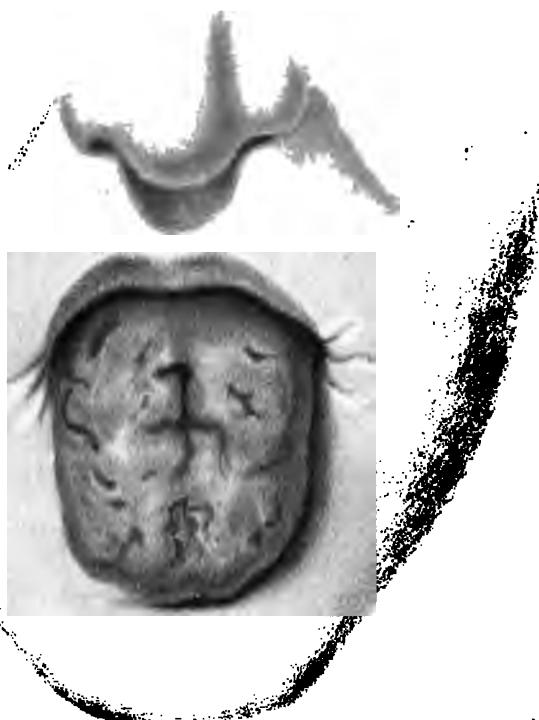


PLATE II.

Fig. A.



Fig. B.



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#### DESCRIPTION OF PLATE II.

FIG. A.—Vertical section through tongue in which epithelioma was engrafted upon ichthyosis.

FIG. B.—Tongue affected with the changes of pellagra. Copied by permission from a drawing in the Museum at Montpellier. It has much the appearance of the smooth variety of ichthyosis in a syphilitic tongue.



two to sixty-seven, the average being a little over fifty-one years of age. There were three under forty years; three between forty and forty-five; six between forty-five and fifty; nine between fifty and sixty; six between sixty and seventy. When the number of years during which the disease had existed was taken into account, it appeared that the average age at the time of commencement was a little less than forty-two years and a half. In sixteen cases in which the duration of the disease was stated the age of the patients at the time of its recognition was in five between thirty and thirty-five; in two between thirty-five and forty; in four between forty and forty-five; one was between forty-five and fifty; three were between fifty and sixty; one was between sixty and sixty-five. The oldest patients had not by any means been affected the longest; thus one man of sixty-four had noticed the ichthyosis thirty years, another of sixty-seven had noticed it only ten years, and another of sixty-five only three years; one of thirty-four had observed the affection of his cheek four years, one of forty-eight for twelve years, and one of fifty-three for only six months. There is good reason to believe that in the majority of cases the condition of the tongue or buccal mucous membrane has not been found out until long after its commencement. I am sure I have seen the beginnings of ichthyosis in young persons under twenty-five years of age, and in one case I persuaded my patient, who was a great smoker, to give up smoking on this account.

*Skin affections associated with ichthyosis.*—In a few cases ichthyosis has been associated with affections of the skin of the head and face. In one instance ichthyosis of the tongue occurred in a man with well-marked congenital ichthyosis of the face and mastoid regions, and congenital deformity of the ears. In another the patient had suffered for ten years from a constantly recurring scurfy eruption of the face and head, and from ichthyosis of the tongue. The latter became worse during an acute attack of eczema of the face and head, which lasted for six weeks, two brownish-red scurfy spots, one in front of and the other on the ear, remained. In a third case there was epithelioma of the lower lip. In a fourth, syphilitic ecthyma of the head and neck. In a gentleman (case not in tables) in whom cancer of the alveolus supervened on ichthyosis of the gum, there was a patch of a brownish furfuraceous character, which had existed many years, over the malar bone; it had of late become more distinct and a little larger. I have never seen the ichthyotic eruption on the

mucous membrane continuous with any eruption on the skin of the lips or cheeks.

*Ichthyosis not invariably followed by cancer.*—Though ichthyosis is by no means an uncommon precursor of cancer, we are not, I think, in a position to say that cancer invariably supervenes in a tongue affected by ichthyosis. In some of the cases the cancer has unquestionably commenced upon a limited ichthyotic plaque; but in others the ichthyosis has remained unchanged in the near neighbourhood of a spreading cancerous sore. Again, whilst the cancer may be limited to a small area the ichthyosis in the same tongue may be widely spread; and after excision of the tongue for cancer the cicatrix has become ichthyotic, but cancer has not recurred in the stump. It would seem, therefore, that ichthyosis and epithelial cancer though allied are independent pathological conditions which are prone to occur in the same individuals, and to be excited by the same causes, but which have very different durations of existence.

*Question of operation.*—The number of years, varying from eight or nine to thirty, during which the ichthyosis exists without cancer supervening, the absence of any sign of cancer other than the ichthyosis itself, even after that period has elapsed, as well as the recurrence of ichthyosis on the cicatrix, make one hesitate to recommend an operation for the removal of ichthyosis alone. If the epithelium is being constantly thrown off here and there, leaving patches of abrasion or ulceration, if the tongue is painful, or tender to the touch, and if this state of things continues after medicinal and dietetic treatment, and abstinence from smoking and drinking have been fairly tried the tongue had best be excised. I have urged the operation in three or four such cases, but in none has it been readily assented to. In one case, in which the patient refused at the time to undergo an operation, cancer soon afterwards developed, and the operation was then performed. Under more favorable conditions than those indicated the patient might, as I think, properly be spared an operation; but the ichthyosis should be regarded as a beacon to warn him of a danger ahead, and to induce him to avoid such things as seem to us, with our present knowledge, likely to aggravate the disease.

*Medicinal treatment.*—The prospect of curing, or even much improving the ichthyosis by treatment is most unfavorable. Without denying the possibility of cure, it may be safely said that a cure is not likely to be obtained. It is only after very prolonged treatment and restraint from sources of irritation that cure can be hoped

for, and to these interferences the patients are not willing to submit, because they suffer little or no inconvenience from the complaint until it begins to threaten to assume cancerous characters. M. Bazin is stated by M. Debove to have cured cases, but only after two or three years of continuous treatment. Alkalies, and hyoscyamus, and arsenic seem to be the only known remedies of the slightest use. Mercury is probably injurious, though it is generally resorted to because in so many instances there is a previous history of syphilis. But if, as I am inclined to believe, the ichthyosis in some cases is the result of cicatrisation of superficial ulcers, and not of any constitutional connection between syphilis and ichthyosis, it is reasonable enough to regard anti-syphilitic remedies as useless, even if not actually harmful.

Mr. MORRANT BAKER referring to the mode of operation, thought that to be the best which most completely removed the disease. In this respect the operation advocated by Mr. Morris had a great advantage. To arrest severe and copious haemorrhage, he advised the placing of the finger at the back of the tongue and pulling the base of the tongue forward; at the same time placing the patient on his side. This allowed time for fixing a ligature round the tongue.

Mr. A. BARKER, from the cases of ichthyosis lingue that he had collected, had come to nearly the same conclusions as Mr. Morris. He believed the disease to be largely due to smoking, but entirely unconnected with syphilis; out of ninety-five cases only five were in female subjects. In one ichthyosis had lasted forty-five, in many twenty-five and thirty years without developing epithelioma. As regards the mode of operation, he thought the point was, which mode will give the patient the greatest chance of non-recurrence. This point should be looked to rather than the relative risks. The operations that had removed not only the tongue itself, but the glands below, were, he thought, the operations of the future.

Dr. COUPLAND thought the problem for surgeons to solve was whether the local disease could be detected and removed early enough to anticipate glandular recurrence. Owing probably to some peculiarity in the lymphatic channels of the tongue, epithelioma of this organ seemed far more prone to infect the glands early than did epithelioma in many other situations.

Mr. MORRIS, in reply, said in the case put by Mr. Owen he would trust to anti-syphilitic treatment. He defended the use of the term "ichthyosis" now so well established. The proof of syphilis as a cause seemed very deficient, but it was difficult in many cases to arrive at the truth on this point. He preferred the use of a ligature passed through the tongue behind the seat of operation to any other means of pulling it forwards. In some cases an operation was performed merely as a palliative to relieve suffering, without any hope of cure. In other cases he believed the operator should aim at removing the glands as far as is possible, but he need not aim at removing the whole tongue when only affected in a limited area with cancer.

TABLE I.—EPITHELIOMA AND

TABLE I.—TWENTY-NINE CASES OF

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis present or not.
1	Charles C., est. 43, a carrier; always good health; robust- looking man	None	July, 1871.—An ulcer ex- tending all along the fra- num from the back of the symphysis to the under surface of the tongue; its edges are raised and hard and well defined; its base deeply excavated	March or April, 1871.— A white patch on floor of mouth, which, after a time, became an ulcer	Epithelioma of floor of mouth began on a small defined patch of ichthy- osis
2	John W., est. 61, married, portman- teau maker; general health not very good	None	Sept., 1872.—A hard lump (ulcerated), as large as a walnut, occupies a large portion of the left half of the tongue; it reaches nearly to the tip, and raises the dorsum; on the right side of the median raphe there is a sore on the surface of the tongue discharging thin, unhealthy pus; a gland beneath the left side of the jaw is slightly en- larged	A year or two ago felt a soreness, but nothing else, till summer of 1872, when a nodule formed, which has since been increasing. It used to smart when- ever he put a pipe in his mouth	None
3	Edwin T., est. 50; syphilis 17 years ago, but without having tongue or throat affected. See Case 1, 'Brit. Med. Journal,' Feb. 21, 1874	Not known	Dec. 27, 1872.—On the left side of the dorsum, near the tip, is a raised irregular mass the size of an almond, quite hard and fissured on the surface, painful when eating and smoking; tongue freely mobile; no enlarged glands. Whilst under syphi- litic treatment, March 6, 1873, a small hard nodule formed on the right half of dorsum, the size of a split pea, and an enlarged gland below left angle of jaw was discovered	Dec., 1872.—An indura- tion in the tongue. Mar. 6, 1873.—A small painful nodule on the right side of the tongue, which, in the course of 3 weeks or a month, sloughed and ulcerated	The greater part of the dorsum was white and leathery for 9 or 10 years; after each opera- tion the cicatrix became coated in the same way as the dorsum had been, i. e. recur- rence of ichthyo- tic condition

## CANCER OF THE TONGUE OPERATED UPON.

Date and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	N
Aug. 13, 1871.—The symphysis of the jaw was divided, and the ulcer and surrounding tissues cut out; dorsum of tongue not touched. May 7, 1872.—Small ulcer on cicatrix cauterised. June, 1873.—Both lingual arteries tied on account of hemorrhage	Feb. 6, 1873.—Recurrence in floor of mouth and alveolus, but not in tongue; the jaw became divided at symphysis by disease	June 29, 1873.—Complete destruction of tissues forming floor of mouth, and caries of jaw; under surface of tongue involved in the foul ulcer	2 years and 3 months	1
Sept. 17, 1872.—Galvano-cautery used, and greater part of the tongue removed, i. e. anterior two-thirds or more. Left the hospital well Oct. 15th	Dec. 26, 1872.—In glands of both sides of the neck	Jan. 11, 1873.—Lungs congested; cervical glands suppurating, but not ulcerated	About 7 months	2
April 20, 1873.—Anterior half of tongue removed by the galvanic écraseur; had been treated with antisiphilitic remedies for 4 months. June 9, 1873.—Discharged well. Oct. 1, 1874.—2nd operation: rest of tongue removed by galvanic écraseur; gland removed. Oct. 27.—Quite well	Aug. 13, 1874.—A florid, red ulcer, size of a split pea on left side of dorsum, near front of the stump of the tongue; edges raised, hard, and well defined; gland below jaw unaltered. June, 1875.—Another gland on left side of neck enlarging; stump of tongue quite sound, and was not the seat of any further recurrence	Nov. 6, 1875.—No p.-m. Glands on both sides of neck enlarged, not ulcerated, but painful. Deglutition became impossible; fed by enemata. Death from exhaustion	3 years. 2 years and 6½ months after 1st operation	3

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis present or not.
4	Wm. C., st. 49; no syphilis; not a great smoker. Case 2, 'Brit. Med. Journal,' Feb. 21, 1874	Not known	April, 1873.—An irregularly four-sided, raised ulcer on dorsum of tongue to right of median line; it has a moist and granular-looking base, is painless, but is felt to be in the way whilst moving his tongue; no cervical glands enlarged	July, 1872.—A red granular-looking sore came on the white horny patch, beginning at the front and outer corner, and gradually spreading all over it	An irregularly four-sided patch of ichthyosis for 10 or 11 years; now the seat of the epithelioma; ichthyosis of cheeks; ichthyosis recurred in cicatrix
5	Geo. B., st. 71, a tailor; syphilis 50 years ago; has always had good health	None	April 7, 1873.—A circular ulcer, size of sixpenny piece, with a red base mottled with white points and hard, well-defined margins. Patient had not eaten solid food for 2 months on account of the pain caused by the attempt. The ulcer is situated on the left edge of the tongue, about half way between apex and base	Feb., 1873.—Small sore on left side of tongue attended with pain; knows of no exciting cause	None
6	Wm. J., st. 64, married; venereal disease (syphilis?) many years ago; is a great smok- er, and is in the habit of chewing strong tobacco	Not known	June, 1874.—An ulcer extends across the whole of the anterior part of the stump of the tongue, involving the whole of the right part of the tongue, and invades the mucous membrane of the floor of the mouth behind the posterior part of the ramus of jaw; the mucous membrane is thickened, red, and edematous; enlarged glands on both sides of the neck	For 10 years mouth has been sore. About July, 1873, an ulcer occurred on dorsum of tongue; attended at University Coll. Hospital for 7 or 8 weeks when first affected with ulcer of tongue	None
7	Eliza G., st. 70; a feeble, thin, spare woman, with congested face	Not known	Feb. 26, 1874.—On left margin of tongue, at junction of anterior and middle thirds, is an ulcer of size and shape of a large coffee-bean, with brawny, indurated, and raised edges, and somewhat excavated greenish-yellow base	Nov., 1873.—Difficulty in swallowing, and a sensation of constantly being cut or scratched on the spot where the ulcer now is	None

Date and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
April 23, 1873.—The diseased patch removed with a pair of curved scissors by Mr. De Morgan. Left hospital on May 27, 1873. 2nd operation, Sept. 3, 1873: lingual artery tied and diseased tissue freely cut out with a knife by Mr. Morris. Well in 3 weeks	Aug. 27, 1873.—Recurrence in cicatrix; a nodule as large as a French bean. April 16, 1874.—Recurrence in glands on right side of neck, but not again in the tongue	Aug. 3, 1874.—An enormous mass of ulcerated and fungating glandular cancer on right side of neck, extending up to base of skull and down to shoulder, displacing trachea over to the left, and widely separating the carotid artery, internal jugular and pneumo-gastric nerve from one another; cords of brachial plexus pushed aside; nodules of cancer in skin over pectoral muscle, on pleura of both lungs, and in mediastinum; lungs congested, especially the left	2 years and 1 month	4
May 21, 1873.—Galvano-écraseur; anterior portion removed obliquely, $\frac{1}{2}$ of the left side and $\frac{1}{3}$ of the right. Antisyphilitic remedies were tried for some weeks, i.e. from April 7 to May 17, 1873	None	May 30, 1873.—Fatty heart; slight pneumonic congestion; sloughing on left side of tongue; cicatrization of right. Death from exhaustion 9 days after operation	3½ months	5
Sometime in April, 1874, an operation for removal of tongue had been performed in St. Bartholomew's Hospital. Had never been quite well since operation	Tongue almost all wanting; vocal cords and thyro-epiglottidean folds intensely oedematous, and a scar of an old ulcer on the left thyro-epiglottidean fold	Dec. 11, 1874.—Large glandular enlargement on right side of neck, which had, by pressure on right sterno-clavicular articulation caused absorption of the inter-articular fibro-cartilage of that joint. Both lungs adherent; right lung oedematous and the seat of numerous patches of lobular pneumonia	1 year and 5 months from beginning; 8 months after operation	6
Mar. 18, 1874.—Galvano-cautery used, and rather more than the anterior half of the left side of the tongue was removed obliquely, leaving the tip. April 14.—Left the hospital well	Nov. 5, 1874.—For nearly 2 months there had been a small, hard gland below angle of jaw, on the left side; tongue quite sound, but she often bites the tip. Jan. 7, 1875.—Tongue still quite sound, but cervical glands larger than a walnut	Not known	Not known. Known to be alive more than 1 year from beginning of disease	7

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis present or not.
11	Wm. L., st. 50	—	—	—	—
12	Henry F., st. 67, labourer; always enjoyed good health	None	April 6, 1876.—Occupying middle half of right lateral border of tongue is a depressed, smooth ulceration, bathed in sanguous pus, with edges hard, everted, and excavated, and about two lines in breadth; rest of tongue soft; mouth unimplicated and movement of tongue unin impeded; no glands enlarged	Symptoms 5 years ago, opposite first upper molar, on right side, at a spot which was scratched and irritated by tooth, noticed a flat, elevated, circumscribed hardness, about size of forefinger nail, which was covered by a thick, white fur. Soon after this had tooth extracted. Patch remained quiescent and painless for nearly 5 years. After convalescence, 14 weeks ago, from erysipelas in the leg, noticed hardness in tongue increase and become painful and excavated on summit; since then progress steady and rapid, increasing in pain and extent	None
13	John M., st. 58, smith; health always good; last 2 months getting thinner; was treated as out-patient by me for a month with syphilis	None	Oct. 6, 1876.—Epitheliomatous destruction of right half of the tongue; outer margin rather sharply cut; there is a broad, thick margin extending from the right apex of the tongue backwards and to the left of the raphe at the root; it nearly embraces the whole breadth of the tongue; the anterior sore is smooth and round; there are masses springing behind the ulceration, which are deeper and covered at places with yellow sloughs. Is able to protrude the tongue beyond the teeth. Part of the floor of the mouth implicated, but lateral mucous membrane reflexed to right jaw unimplicated; sore often bleeds, but to no great quantity. There is a gland below the jaw enlarged	5 months ago, i. e. in May, 1876, whilst smoking, felt soreness. He found a small sore, the size of a pea, about 1" from tip on right side of tongue. Operation advised, but declined. About 6 or 7 weeks after noticing the sore, was in-patient under Mr. Savory at St. Bartholomew's Hospital; no operation advised. The sore rapidly extended, interfering with swallowing. For the last 2 months has had gnawing pain in tongue, spreading over the side of the face and around and inside of the ear	None
14	Pourfret M., st. 43, married,	Father died of cancer	Nov. 2, 1876.—On the left side of tongue is a hard, elevated mass, its superficial area being the size of a	3 months ago noticed side of tongue sore, due to irritation of tooth; had tooth drawn. The	Unknown

Date and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
Aug. 3, 1874.—In Swansea Hospital. Recovered rapidly from the operation	Some weeks after operation recurrence took place in the glands of the neck, but no mention is made of mouth. He could not swallow, and after a time fluids even returned by nose and mouth	Jan. 14, 1875.—“Starvation”	10 months	8
Sept. 8, 1875.—Amputation of tongue by Mr. Clark with wire écraseur passed through floor of mouth, round base of tongue. Oct. 6.—Galvanocautery used to burn off all diseased tissue remaining on left side of mouth. Oct. 18.—Actual cautery applied to a spot of recurrent disease. Nov. 3rd.—2nd operation to remove mass at root of tongue. An incision was made from left angle of mouth backwards to ascending ramus of jaw; facial and coronary vessels twisted and tied; the soft parts then dissected downwards off the horizontal maxillary ramus, which was then sawn through at the symphysis, and the divided portions held back by insertion of a gag; mass in floor of mouth removed by blunt-pointed bistoury; bone drilled and brought together by wire. Readmitted August, 1877	Tongue; floor of mouth and glands in the neck	May 20, 1878.—Stump of tongue in great part destroyed by epitheliomatous ulceration; tissues in floor of mouth infiltrated, and cervical glands extensively cancerous and broken down into a soft sloughing mass. Lungs highly oedematous	3 years and 5 months	9
June 30, 1875.—Incision through cheek, and tongue removed by Mr. Morris by galvanocautery. July 28.—2nd operation by Mr. Nunn; stump of tongue and tissues of floor of mouth removed by means of supra-hyoïd incision and wire écraseur. Left hospital Aug. 11	Recurrence on stump of tongue and a second ulcer on the floor of the mouth observed before leaving hospital. Second recurrence soon after second operation	Death some weeks after leaving the hospital	About 6 months	10

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis present or not.
11	Wm. L., est. 50	—	—	—	—
12	Henry F., est. 67, labourer; always enjoyed good health	None	April 6, 1876.—Occupying middle half of right lateral border of tongue is a depressed, smooth ulceration, bathed in sanguous pus, with edges hard, everted, and excavated, and about two lines in breadth; rest of tongue soft; mouth unimplicated and movement of tongue unin impeded; no glands enlarged	Symptoms 5 years ago, opposite first upper molar, on right side, at a spot which was scratched and irritated by tooth, noticed a flat, elevated, circumscribed hardness, about size of forefinger nail, which was covered by a thick, white fur. Soon after this had tooth extracted. Patch remained quiescent and painless for nearly 5 years. After convalescence, 14 weeks ago, from erysipelas in the leg, noticed hardness in tongue increase and become painful and excavated on summit; since then progress steady and rapid, increasing in pain and extent	None
13	John M., est. 58, smith; health always good; last 2 months getting thinner; was treated as out- patient by me for a month with syphilis	None	Oct. 6, 1876.—Epitheliomatous destruction of right half of the tongue; outer margin rather sharply cut; there is a broad, thick margin extending from the right apex of the tongue backwards and to the left of the raphé at the root; it nearly embraces the whole breadth of the tongue; the anterior sore is smooth and round; there are masses springing behind the ulceration, which are deeper and covered at places with yellow sloughs. Is able to protrude the tongue beyond the teeth. Part of the floor of the mouth implicated, but lateral mucous membrane reflexed to right jaw unimplicated; sore often bleeds, but to no great quantity. There is a gland below the jaw enlarged	5 months ago, i. e. in May, 1876, whilst smoking, felt soreness. He found a small sore, the size of a pea, about 1" from tip on right side of tongue. Operation advised, but declined. About 6 or 7 weeks after noticing the sore, was in-patient under Mr. Savory at St. Bartholomew's Hospital; no operation advised. The sore rapidly extended, interfering with swallowing. For the last 2 months has had gnawing pain in tongue, spreading over the side of the face and around and inside of the ear	None
14	Pourfret M., est. 43, married,	Father died of cancer	Nov. 2, 1876.—On the left side of tongue is a hard, elevated mass, its superficial area being the size of a	3 months ago noticed side of tongue sore, due to irritation of tooth; had tooth drawn. The	Unknown

Time and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
Operations had been performed by Mr. Macnamara since May, 1878	Repeated recurrence in stump of tongue; glands in neck also became involved	Dec. 23, 1878, at own home	Under 12 months	11
, 1876.—Excision of a portion of the tongue by wire écraseur, neck from right of mouth having previously divided. Hemorrhage. Died May 16, 1876	During convalescence some slight enlargement of glands on right side, which caused pain	Not known	Not known	12
, 1876.—Ablation of tongue. Tongue derived from floor of mouth and removed by écraseur introduced through a supra-hyoidean opening. No hemorrhage after removal. Root of tongue secured by a suture	Dec. 1.—Symptoms of returning disease in the shape of granulation masses on right side of stump of tongue	Dec. 11, 1876.—Tongue represented by a soft, irregular ulcerated mass. Base of ulcer covered with blood and shreds of sloughing tissues. On section, none of muscular substance of organ could be distinguished amidst the amount of blood and opaque, yellowish, necrotic masses. A few slightly enlarged glands below tongue, but do not present white appearance of cancerous infiltration. Right lung pneumonic. Left lung—Upper part contained a wedge-shaped area, size of a walnut, containing soft, greyish matter; marginal part was seat of hemorrhage. Lung was edematous and emphysematous	7 months	13
, 1876.—Operation by Mr. Nunn. The diseased portion of the tongue removed by wire	Not known	Not known	Not known	14

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis present or not.
14	porter ; no history of syphilis		shilling piece ; the surrounding tissues are indurated ; pain only when touched and during deglutition ; no bleeding	sore, when first noticed, was the size of a pea ; since then it has increased rapidly, and is now the size of a shilling	
15	Geo. B., wt. 64, carpenter ; has smoked all his life, but not excessively	None	Jan. 3, 1878.—A nearly uniform, pearly white covering on dorsum of tongue, interrupted near the edge of the ulcer by a papillary white growth ; there is an extensive ulcer on the left half of the dorsum and edge from near the tip to near the base ; the disease encroaches a little over the median line ; glands not involved ; maddened by pain in the tongue and ear ; has no sleep	Sept., 1877.—A crack was produced on the left edge of the tongue by a decayed tooth	For 30 years has had a white covering on his tongue, which he often scraped off; always worse in summer when taking large quantities of water and beer
16	Richard L.	?	April 4, 1878.—Recurrent epithelioma of right side of stump of tongue and in cervical glands, following an operation in Nov., 1877. Deep ulceration of tongue, and much enlargement of glands in neck ; great pain and difficulty in feeding ; anodynes fail to give any relief ; is very anxious to have any operation done for relief of pain	?	?
17	James L.R., wt. 42, attendant at British Museum ; always good health ; syphilis 15 years ago ; always a great smoker	None	Aug. 13, 1878.—Near tip, on the left side of tongue, is a circular, raised lump, size of section of a marble, like a wart ; behind this ulcer, and in a line with it, are two small abrasions, and in front are two or three others irregularly scattered ; there is induration around the raised ulcer ; the surface of the tongue	July 13, 1878.—A soreness on the right side of the tongue, which is attributed to smoking some bad tobacco. Subsequently gland below the jaw became enlarged, which was removed at operation, Oct. 23, 1878	None

Date and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
écraseur without division of cheek. No haemorrhage. Discharged Nov. 24, 1876, convalescent				14
Jan. 9, 1878.—After dividing the connections of the tongue to the floor of the mouth with scissors, nearly the whole organ was removed by twisted wire écraseur. Jan. 31.—Left hospital well	April 11, 1878.—Recurrence at the junction of the stump to the floor of mouth; there is an enlarged gland below angle of jaw; for a week past has had some pain, but not to be compared with that before the operation, for which he is very grateful	Not known	Known to be alive 7 months after commencement of disease and 6 months after operation	15
Portion of tongue had been removed in another hospital in Nov., 1877. June 18, 1878.—I divided the lingual (right) gustatory nerve. June 20.—Has had much relief from the operation; there is more discharge from the mouth, and sloughing seems to be extending more rapidly than before division of nerve	Recurrence in both the stump of the tongue and the cervical glands within 5 months of operation for primary disease. Before death an enormous abscess formed by the side of the jaw, the ulceration in the mouth spread, and there were frequent haemorrhages. He died exhausted, having been kept alive for a long time by feeding with the stomach tube, as he was quite unable to swallow	September, 1878	? About 11 months after primary operation	16
During Aug. and Sept., 1878, the small sores healed under tonic medicine and the local application of Pil. hydrargyri, but the induration of the large ulcer rapidly increased; before the operation it was the size of half a walnut, and a gland had become enlarged. Oct. 23.—Re-	Feb., 1879.—Recurrence began in glands below the right angle of the jaw. The tongue remained sound	July 31, 1879.—Died in great pain from pressure of enlarged glands and difficulty in deglutition. On right side of neck, from ramus to clavicle, is a large ulcer, deeper in centre; foul discharge; indurated tissues around. Oesophagus and larynx not penetrated, though ulceration reaches down	1 year and 14 days	17

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis p or not.
17			is deeply fissured with enlarged papillæ in the depressions; there is no glandular enlargement		
18	Thomas D., st. 42, commercial traveller	—	Operation had been performed on tongue before admission; recurrence had taken place in glands	Unknown	Unknow
19	David M., st. 67, painter and house decorator; syphilis 46 years ago, but no ulcer on tongue; great smoker for years; temperate; drinks whiskey in Scotch fashion, whiskey first, water last; also has a habit of drinking acetic acid, and uses it freely as vinegar for salads, of which he freely partakes	None	Jan. 23, 1879.—An extensive ulcer, circular, surrounding a greyish papillomatous growth on left side of dorsum of tongue	Does not know how long the ulceration has existed. Advised to come into hospital and have tongue removed, but declines operation; refuses to come in "because his wife died in this hospital of hernia"	For 10 ye more the has been ic tic. The and edge tongue pre very striki pearance, al the white s looking fo ichthyosis marked
20	Geo. E., st. 56,	None	Oct. 2, 1879.—An excavated ulcer, with raised and in-	Aug., 1879.—When being examined by a	None

Date and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
moved by knife after transfixing tongue with needles. Nov. 6.—Discharged well		to cellular tissue. Carotids pervious. Veins not found. Right lung emphysematous. In upper part of lower lobe of left lung is a soft, white, friable mass, size of a marble, but not caseous; surrounded by catarrhal pneumonia		17
—	Infiltration and ulceration of cervical glands; ulceration and sloughing of right external carotid artery; ligation of common carotid artery 4 days before death. No recurrence in stump of tongue	Feb. 9, 1879.—Right side of jaw, to within an inch of clavicle, is seat of a large triangular ulceration, at the bottom of which lay the large vessels of neck exposed and much discoloured by decomposition. Three ligatures were met with; the others embraced the upper end of common carotid artery; the surrounding tissues were matted together and infiltrated with cancer; cancerous glands extending as low as clavicle. Beneath and behind angle of jaw was a mass of ulcerating cancer, in which could not be found the various structures; but external carotid extensively ulcerated; internal carotid embedded in cancerous mass. The right side of the tongue near tip was white and pucker'd by cicatrical tissue, and, on section, muscular part appeared pale and fatty; but no recent ulceration occurred on tongue. Lower lobe of left lung consolidated throughout, having the character of grey hepatisation. Right lung was much congested	Unknown	18
In March, 1879. Tongue was removed in another hospital by the supra-hyoid method. Recovered in 6 weeks	Recurrence commenced in the stump and spread in floor of mouth. Deglutition became almost impossible. A gland on the left side of the neck enlarged towards end of life. Marked emaciation before death	Feb. 15, 1880. At his own house	About 15 months	19
Oct. 8, 1879.—Perforated floor of mouth and used	—	—	March 16, 1882.	20

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis pr or not.
20	pianoforte maker	—	duration edges and nodulated base, about 1 inch in length, is situated at the junction of the floor of the mouth and the right edge of the tongue. The tissues in the floor of the mouth are quite supple, except immediately around the ulcer	medical man a small whitish pimple was noticed on right side and under surface of tongue, which was burnt with caustic. He was in the habit of filing teeth, and thinks some of the metal got off the file into the sore and irritated or poisoned it	
21	Mary M., st. 47, subject to sore throat and tonsillitis	—	Dec. 24, 1879.—On right side of tongue, extending from dorsum to lower surface, and situated half way from tip to base, is a raised oval-shaped mass, the shape and size of a small fibert as seen on surface, but really much larger, as it extends inwards in substance of the tongue towards median line as a hard and resisting deposit. Its free edge is ulcerated and slightly excavated, and in the centre of the ulcer is a small ashy-grey slough. There is no enlarged gland	Nov., 1879. — First complained of tongue being sore and painful. Has had difficulty in swallowing for some time before that. Dec. 15.—Seen by Sir Jas. Paget, who wrote: "The tongue is certainly cancerous. I advise its removal as soon as this can conveniently be done"	None
22	Emma W., st. 35; intemperate; admits having been a smoker for many years; florid complexion, but says she has lost flesh lately, and is very weak	None	March 29, 1880.—The right side of tongue from close to tip to near root is covered with a blackish grey slough, which extends beyond the middle line over to the left side. The right edge of the tongue is ulcerated and irregularly indented by adjacent teeth. The whole organ is bound down to floor of mouth, and cannot be protruded. Glands in right anterior triangle distinct, but not much enlarged, and not painful or tender. Cannot eat solids, but swallows fluids easily. There is copious salivation. Donovan's solution had been tried	In Aug., 1879, a little pimple came on the right side of the tongue, to which alum was applied. In Sept. a medical man advised removal of a decayed tooth on same side. Disease has been spreading, and there has been copious salivation	None

Id character of operation.	Date and situation of recur- rence of disease.	Date and cause of death.	Duration of disease.	No.
écraseur passed incision. Two operation a line which appeared at stump of tongue, quite separated.—Left hospital stump of tongue alred. June 10, removed a frag- necrosed bone n	—	—	Still living and well. 2 years, and 5½ months after operation. 2 years, 7 months from beginning of disease	20
1879.—Tongue along median line resected half re- cently twisted wire Jan. 10, 1880. done well and me on 12th, but an attack of set in. Jan. 13. tonsil lanced. -Returned home	—	—	March 2, 1882. Still remains quite well. 2 years and 3 months. Nov., 1883, still alive and free from disease	21
380.—The whole removed with wire écraseur in right side of mouth. In the absence of molars made this convenient and safe side. April 30. of tongue quite bad patient feel- ; appetite good did food ; se- haemorrhage on 5th day; soon Sept. 3.—Was ed on account hemorrhage from an a hard fibrous stretching from the of the tongue to palate	Recurrence in pillar of fauces	Oct. 9, 1880.—On right side of lower jaw there was an irregular opening, with sloughing edges, leading to the mouth. Lungs: right base adherent, oedematous, and engorged; left lung the same. Tongue had previously been removed. Tissues around were infiltrated by cancerous growth. Lower jaw, on right side, bare of periosteum, and fractured from necrosis following cancerous infiltration. Larynx and oesophagus free	—	22

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis p or not.
23	Fanny P., æt. 70, widow, mother of 8 children; good general health	None	May 7, 1880.—On the right side of the tongue, about opposite to the 2nd molar tooth, is a small, deeply excavated sore of the area of a 6d., with, ragged, indurated edges; the tissues around are hard and indurated; suffers great pain, and swallows with difficulty; has not taken solid food for many months; there is always some, and sometimes profuse, foul discharge from the sore. The disease spread rapidly after admission, until the induration extended to the left of the median line of the tongue and back as far as the base. The finger could be placed behind the affected area between it and the epiglottic folds. There is some slight fulness and a little pain behind the angle of the jaw, on the right side	Christmas, 1879. — A small blister, due to irritation against a decayed tooth, and she was told it was an abscess. 5 weeks later on an ulcer occupied the seat of the blister, and the swelling about it went on increasing until 3 weeks ago, when something burst in the mouth, and about 3 tablespoonfuls of matter and blood came away; since then the ulcer has increased much more rapidly	None
24	Henry R., æt. 65, cabinet maker; a thin, wiry man; gonorrhœa 40 years ago; no syphilis	None	March 22, 1881.—Just to the left of median line of tongue, and at its tip, there is a rounded sore with an unhealthy base and slightly raised edges; the induration around the edges extends some distance into the substance of the tongue. An enlarged but not very indurated gland can be felt beneath the margin of the jaw. Iodide of potassium continued without benefit till March 31, 1881	Jan., 1881. — A sore came on the tip of the tongue, which has been gradually increasing. 15 months before had a small sore on exactly the same spot, which was well in 3 weeks	None
25	James A., æt. 58, builder; healthy man, with florid com-	None	May 15, 1881.—On the left side of the tongue, close to the tip, is a red, smoothly ulcerated surface, with sharply defined, hard, raised edges; it is the size of a	Jan., 1881. — Disease began. Caustics have been applied. Has been treated medicinally for 5 or 6 weeks and by application of	Dorsum of tongue rough, with white patches

Time and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
<p>26, 1880.—The skin having been shaved by suitable and frequent dressing and frequent gargling, operation was performed. The skin was slit from base of tongue and both halves freed by wire écraseur. Patient very quickly began to benefit from the operation and improved daily, and on June 10th had had quite cicatrization. June 11.—Discharged well</p>	<p>June 24, 1880.—An enlarged gland, about size of half a walnut, is felt beneath the sterno-mastoid opposite the angle of the jaw. Whilst in the hospital there was a little fulness in this situation, but no distinctly enlarged gland could be felt</p>	<p>—</p>	<p>Known to be alive 7 months after disease commenced</p>	<p>23</p>
<p>31, 1881.—Tongue along middle, and greater part of the lateral half removed by wire écraseur. 26.—Left hospital leescent</p>	<p>Oct. 4, 1881.—No recurrence in mouth or glands</p>	<p>—</p>	<p>Still living</p>	<p>24</p>
<p>1, 1881.—Tissues in mouth divided so as to free tongue. Anterior two thirds of dorsum, about one half of under surface removed by</p>	<p>March 2, 1882.—Recurrence in glands in neck on left side. The glandular swelling has very slowly increased until 4 days ago, since which</p>	<p>—</p>	<p>April, 1882. 15 months, and is still living</p>	<p>25</p>

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis or not
25	plexion; venereal disease (not syphilis) 30 years ago		1s. piece There is a hard and enlarged gland in the left digastric triangle. The teeth are jagged and carious. Patient has lost flesh rapidly and swallows with difficulty	Pil. Hydrargyri to the sore on tongue	
26	Henry L., st. 45, coachman; very temperate; syphilis 20 years ago	None	July, 1881.—On the left side of tongue, on its under-surface, close to the tip, is a projecting lump, irregularly ovoid in shape, and having an area as large as a 1s. piece; the base is concave and covered with a grey slough; the mass is hard, but smooth, where not ulcerated. On the right side is an old ulcerated surface, now healed. There is doubtfully enlarged gland in the left submaxillary triangle. Pain slight; speech and swallowing not affected	June, 1880.—A little lump appeared "with little beads around it," which has increased since. The patient has all along been under anti-syphilitic treatment by some of the first surgeons in Dublin (showed his prescriptions)	The dorsum tongue is where with slight ichthyosis; but are two marked p one on the of median 1 inch from second close median rap tip; condit ticed 8 or 1
27	James L., st. 61, married	?	Feb. 17, 1881.—Recurrent cancer in gland of neck. There is a freely moveable and enlarged gland below and behind angle of jaw. Skin unaffected	Epithelioma of tongue (left side) removed by Mr. Hulke in Aug., 1880	—
28	Johanna B., st. 42, married; had syphilis about 26 years ago; had been a great smoker of tobacco on account of asthma	None	June 10, 1881.—Epithelioma of tongue, right side. Glands behind the right angle of jaw enlarged	June, 1880.—A large ulcer on right side of tongue at junction of middle and posterior third, which has been coming for 12 months	Ichthyosis of upper part of d epithelium raised, but red and white; a patch on cheek, near of mouth

Date and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
wire écraseur worked in an oblique direction. June 5.—Abscess opened in left side of neck about half way down, and subsequently near clavicle; stump of tongue healed. July 15.—Left hospital well	there has formed a large cystic distension, from which 2½ oz. of clear serum, followed by a little pus, escaped with great relief to patient	—	—	25
July 28, 1881.—Twisted wire écraseur. Anterior half removed. Aug. 9.—Left hospital well	—	—	March 30, 1882. Still living and in perfectly good health. Nov., 1883, alive and free from disease	26
—	Feb. 21, 1881.—Gland of neck	—	Still living, 8 months after operation	27
June, 1881.—Mr. Lawson removed the right half of the tongue on account of the severity of pain. Left hospital July 12th	July 28, 1881.—Glands enlarging rapidly. Oct. 6.—No recurrence in tongue, but glands very large and painful	Dec. 25, 1881.—Under right ear is a large, sloughing, excavated sore, large enough to admit an orange. The skin on that side, as far as median line in front, is undermined by a similar ulcer, destroying to great extent the sternomastoid. A few old adhesions over right lung; otherwise healthy	1 year and 7 months	28

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis present or not.
29	Wm. F., age 66, arcus senilis and well- marked capillary congestion; for some time has taken alcohol freely	None	July 23, 1881.—An epitheliomatous ulcer to the left of median line in floor of mouth, involving the under surface of the tongue, but reaching quite to the soft tissues covering the inner surface of the jaw. The ulcer is the size of a "prune," granular-looking and raised. It has a tendency to bleed when touched. Teeth are very bad, discoloured, and covered with tartar	May, 1881.—Noticed a sore, with pain, on the left side of the tongue	None

Date and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
July 30, 1881.—With scissors curved at nearly a right angle, with blades working vertically instead of laterally, the tissues were detached from the inner surface of lower jaw; then large curved needles were passed beneath the diseased structures, which were well raised, and cut away from the healthy tissues by scissors curved on the flat and opening laterally. The section was made wide of the disease all round. The left lingual artery was divided and torsioned at once without loss of blood. Thermo-cautery stopped all oozing, and was further used to destroy all tissues on the jaw side beyond what had been removed with the scissors. Aug. 3.—Secondary haemorrhage. 13th.—Went home well	Nov., 1881.—Recurrence in glands of neck. First, those under chin, but rapidly extending till the whole of the anterior cervical glands were implicated. The skin broke and copious discharge and sloughing followed. Not until a week before death was there any recurrence in floor of mouth, and that by extending from tissues around the cervical lymphatic glands	Jan. 16, 1882	8 months	29

TABLE II.—EPITHELIOMA AND

TABLE II.—THIRTY-TWO

No.	Name, age, brief statement of condition when first seen.	Date and mode of commencement.
1	Marianna K., st. 49. April 24, 1873.—A deep ulcer involving the under surface of tongue from tip along left border; much of the left edge of the tongue has been eaten away; not much induration around; pain severe. Tongue is fixed, but there is so much swelling of tongue that it is often bitten, and when bitten it readily bleeds. Salivation profuse. Considerable induration of tissues below jaw on each side	About April, 1872, an ulcer formed on under surface of tongue near the tip. Pain. Blue stone and other caustics frequently applied
2	Mary Anne K., st. 55, widow. Mother died of cancer of stomach. March 19, 1874.—Tongue edematous, especially at tip and left side; it projects beyond the teeth at sides and in front; the tongue is fixed. An excavated ulcer runs along the whole of the edge of the tongue. The left anterior pillars of the fauces are involved. Glands below left side of the jaw much enlarged	About Oct., 1872, a small, white, hard blister appeared on left edge of tongue, opposite a rough tooth
3	Henry G., st. 45, gun maker. Aug. 14, 1873.—Affection of glands on right side of neck; very greatly enlarged, occupying the whole of the anterior and part of the posterior triangles of the neck. Skin over the most prominent part beginning to ulcerate. Glands on left side enlarged, but to a much less extent. Cannot protrude the tongue. On right side of dorsum of tongue is a large, foul ulcer extending to floor of mouth. Severe salivation. Edema of right forearm before death	For about 1 year (1872) his tongue has been sore all over. After about 4 months the glands in the neck began to enlarge
4	Samuel B., st. 56, tailor. May 1, 1873.—Has bad health. Never had syphilis. There is a ragged ulcer extending from tip to near the base, involving nearly the whole of the left half of the tongue. The edges of the ulcer are raised and hard, the outer one being notched by the teeth. Sloughs are separating from the base of the ulcer. There is an enlarged gland below the left angle of the jaw. 'Brit. Med. Journal,' Feb. 21, 1874, Case III	In Sept., 1872, noticed a small, raised sore on the left free edge of the tongue, a little way from the tip. This had frequently been cauterised
5	Michael C., st. 68, hop presser. Venereal disease 40 years ago. Good health till Christmas, 1872. June 27, 1873.—Tongue fixed; it has a beefy red appearance; each lateral border is elevated, so that a deep median fissure extends along the middle line; the front half is much indurated and edematous, and there is a hard rounded mass as large as a marble in the substance of the left half of the organ. The glands on each side below the jaw are enlarged	About Dec., 1872, speech became altered and the movements of the tongue limited; no sore on the tongue then, so far as he knows, but often felt as if "the skin was coming off the tongue and his mouth was all on fire"

## CASES NOT OPERATED UPON.

Parts affected during the course of disease.	Preceded by ichthyosis or not.	Date and cause of death and post-mortem conditions.	Duration of disease.	No.
Came into hospital May 8, and left on May 20, 1873	None	Unknown	Alive 13 months after beginning of disease	1
—	None	Unknown	Alive 1 year and 5 months after beginning of disease	2
Cancer of glands of neck invading root of tongue and right half of larynx; slight oedema of lungs. Secondly, nodules in pleura, liver and kidney, and supra-renal capsules	None	Sept. 23, 1873.—A large tumour occupies the supra-clavicular region; adherent to skin in which were also isolated nodules. It reached upwards beneath angle of jaw, and involving right half of root of tongue, projecting into cavity of mouth as a tumour the size of a chestnut. Frothy mucous contained in bronchial tubes	13 months	3
Refused the operation. Disease spreading rapidly	White, tough, irregular patches on dorsum and also on under surface of tongue for at least 10 years	Unknown	Unknown	4
About Feb., 1873, left side of tongue became ulcerated. Salivation became severe. A large quantity of blood was lost subsequently from floor of mouth; probably there is ulceration beneath tongue, but this cannot be seen owing to fixation of tongue; no pain. Sept. 18, 1873.—Ulceration beneath tongue now well seen. Feb. 17, 1874.—Admitted under Mr. De Morgan. March 20.—Fistula in ano. July 28.—Left hospital at own request	None	Unknown	Alive 19 months after commencement of disease	6

TABLE II.—EPITHELIOMA AND

No.	Name, age, brief statement of condition when first seen.	Date and mode of commencement.
6	Mary B., ast. 52, mother of five children. Dec. 10, 1874.—There is a deeply fissured ulcer, with thickened, everted edges, occupying the whole of the right half of the tongue, except close to the tip; movements of tongue are free; pain. Glands on right side of neck involved	April, 1874.—Small crack was detected far back on the right side of tongue, opposite a tooth with a rough edge; this crack soon spread into an ulcer. Has been under treatment by own medicus ever since
7	John B., ast. 43. Smokes a little. July 2, 1874.—There is a large excavated ulcer, with ashy gray base, and hard, irregular margins on right side of tongue; it extends to the base and inwards to median line, so that there is a gap long enough to contain a marble. On dorsum is a hard, raised, smooth patch, which subsequently became more prominent and superficially ulcerated. Glands enlarged	May, 1874.—Small pimple appeared on right side of tongue, about half way between the base and apex; within a day or two it began to ulcerate, and has done so progressively ever since
8	John C., ast. 55, labourer. Positively denied syphilis and even gonorrhœa. Michaelmas, 1874.—The right half of soft palate, right anterior pillar of fauces, and right side of base of tongue is the site of a raised, sprouting ulcer, which extends outwardly to the cheek. Portion of uvula ulcerated away. Ulcer bleeds readily; is not painful. No enlarged glands	June, 1874.—Noticed a soreness on back of throat and right side of mouth, and in July, 1874, an ulcer was observed on right side of fauces, which has since been spreading in all directions; no pain; no marked interference in swallowing
9	George B., ast. 40, French polisher. First seen by Mr. Morris Sept. 28, 1876. Admitted Oct. 15, 1876, under Mr. Hulke	For 2 years (1874) has been affected with cancer of tongue
10	Caroline M., ast. 30, dressmaker; mother of three children. Miscarriage between second and third child. Dec. 12, 1878.—Tongue much enlarged; three separate raised nodules in tongue, one as large as a walnut, which extends through the whole thickness of the organ. There is some ulceration on dorsum and along left edge of tongue behind the largest nodules. Glands enlarged below jaw on left side	Between 3 and 4 years (1874) sore on tongue, attributed to friction against a bad tooth; before the sore there was pain for a long time at this part of the tongue. Since 9 months ago, when last child was born, the ulceration has rapidly become worse and lumps have formed on the tongue; caustic has been applied. No enlarged glands till June, 1878, they supurated and discharged

Parts affected during the course of disease.	Preceded by ichthyosis or not.	Date and cause of death and post-mortem conditions.	Duration of disease.	No.
Feb. 11, 1875.—Hæmorrhage, which subsequently recurred at intervals of 6 weeks, but not afterwards	None	April 16, 1875.—At own home, suddenly from syncope	1 year	6
Tongue became quite fixed. Admitted under Mr. Lawson, Aug. 13. 1874	None	Oct. 25, 1874.—Right lung at apex contains cretaceous deposits, and scattered throughout it several pneumonic patches; congestion and oedema of base. Left lung more advanced. Suppuration around exterior of larynx. A few solitary enlarged glands in neck. Whole anterior portion of tongue eaten away by cancer	6 months	7
June, 1875.—Tongue cannot be protruded; in right half there is a very hard, rounded mass; articulation and swallowing difficult; no pain. Induration along lower border of jaw on right side. No distinct glandular enlargement. Left hospital at this date, after residence of 265 days. Nov., 1875.—Too ill to attend; can scarcely swallow	None	—	1 year and 5 months	8
Feb. 4, 1877.—Extensive ulceration of tongue, infiltration of surrounding tissues and cervical lymphatic glands. Nodules on pharynx and upper part of larynx suppurating; lobular pneumonia; granular kidneys			—	9
The whole of floor of mouth, pillars of fauces, and stump of tongue presents a warty, red, ulcerated surface. All tissues below inferior maxilla much indurated and swollen, and penetrated by a sinus below the chin. Was in hospital from April 14 to May 2, 1879. Severe hæmorrhage. Front half of tongue black and gangrenous. July: Growth spreading from floor of mouth over alveolus to front of symphysis	None	In July or August, 1879. Died at home	17 months	10

TABLE I.—EPITHELIOMA AND

No.	Name, age, occupation, and state of health of patient.	Family history of cancer.	Date and character of disease when first seen.	Date and manner of commencement of disease.	Ichthyosis present or not.
17			is deeply fissured with enlarged papillæ in the depressions; there is no glandular enlargement		
18	Thomas D., st. 42, commercial traveller	—	Operation had been performed on tongue before admission; recurrence had taken place in glands	Unknown	Unknown
19	David M., st. 67, painter and house decorator; syphilis 46 years ago, but no ulcer on tongue; great smoker for years; temperate; drinks whiskey in Scotch fashion, whiskey first, water last; also has a habit of drinking acetic acid, and uses it freely as vinegar for salads, of which he freely partakes	None	Jan. 23, 1879.—An extensive ulcer, circular, surrounding a greyish papillomatous growth on left side of dorsum of tongue	Does not know how long the ulceration has existed. Advised to come into hospital and have tongue removed, but declines operation; refuses to come in "because his wife died in this hospital of hernia"	For 10 years or more the tongue has been ichthyotic. The dorsum and edges of tongue present a very striking appearance, showing the white sodden-looking form of ichthyosis to a marked degree.
20	Geo. E., st. 56,	None	Oct. 2, 1879.—An excavated ulcer, with raised and in-	Aug., 1879.—When being examined by a	None

Date and character of operation.	Date and situation of recurrence of disease.	Date and cause of death.	Duration of disease.	No.
moved by knife after transfixing tongue with needles. Nov. 6.—Discharged well		to cellular tissue. Carotids pervious. Veins not found. Right lung emphysematous. In upper part of lower lobe of left lung is a soft, white, friable mass, size of a marble, but not caseous; surrounded by catarrhal pneumonia		17
—	Infiltration and ulceration of cervical glands; ulceration and sloughing of right external carotid artery; ligation of common carotid artery 4 days before death. No recurrence in stump of tongue	Feb. 9, 1879.—Right side of jaw, to within an inch of clavicle, is seat of a large triangular ulceration, at the bottom of which lay the large vessels of neck exposed and much discoloured by decomposition. Three ligatures were met with;	Unknown	18
one, the highest, came away attached to a slough; the others embraced the upper end of common carotid artery; the surrounding tissues were matted together and infiltrated with cancer; cancerous glands extending as low as clavicle. Beneath and behind angle of jaw was a mass of ulcerating cancer, in which could not be found the various structures; but external carotid extensively ulcerated; internal carotid embedded in cancerous mass. The right side of the tongue near tip was white and puckered by cicatricial tissue, and, on section, muscular part appeared pale and fatty; but no recent ulceration occurred on tongue. Lower lobe of left lung consolidated throughout, having the character of grey hepatization. Right lung was much congested				
In March, 1879. Tongue was removed in another hospital by the supra-hyoid method. Recovered in 6 weeks	Recurrence commenced in the stump and spread in floor of mouth. Deglutition became almost impossible. A gland on the left side of the neck enlarged towards end of life. Marked emaciation before death	Feb. 15, 1880. At his own house	About 15 months	19
Oct. 8, 1879.—Perforated floor of mouth and used	—	—	March 16, 1882.	20

TABLE II.—EPITHELIOMA AND

No.	Name, age, brief statement of condition when first seen.	Date and mode of commencement.
11	William H., st. 52, painter. July 1, 1875.—Considerable induration of whole of tongue; the right edge deeply eaten out. On dorsum, near tip, one or two small superficial ulcers. Tongue tied to floor of mouth. Glands on each side below jaw much enlarged. Speech and deglutition difficult	In March, 1875, white blister on right edge, which soon "worked into a hole." Rapidly spreading since
12	Ellen S., st. 52, tailoress. Admitted May 1, 1876. An epitheliomatous induration and excavation occupying the whole of the left half of tongue except the tip, extending back to root; induration beyond middle line; fixed to floor of mouth; tip of tongue just protruded beyond teeth. In the centre of the mass is a depressed, smooth, quite clean excavation. The outer edge is sharp and precipitous, and inner margin smooth and rounded. Unable to swallow saliva. Very little discharge. Glands under both sides of jaw enlarged and painful. Pain in tongue when touched, and shooting through middle of both ears. Thin and emaciated	May, 1875, small blister, about size of 3d. piece, formed on left side of tongue; extremely painful, and burst after existence of a week, leaving hard lump at base; this remained and gradually increased; shortly after got sore throat and difficulty in swallowing; this improved, but sore on tongue increased. Last Nov. greater difficulty in swallowing, and hard lump formed under left angle of jaw; 2 months ago glands on right side enlarged; since Christmas can only swallow liquids. Tongue quite fixed to floor of mouth
13	Alice P., st. 25, housewife. Very anæmic looking, phthisical woman. Feb. 2, 1877.—There is a deep ulcer, with raised and indurated edges on right side of tongue; the induration involves all this side and reaches beyond median line into left portion; tongue fixed. Glands below jaw very hard. Lancinating pain. Difficulty in swallowing. No cancer in family. Has never had syphilis	Since summer of 1876 has complained of tongue being sore from friction against rough teeth, molars and premolars. Had for many months been under treatment for tubercular disease of lungs
14	George E., st. 50, gasfitter. June, 1877.—An indolent, smooth, epitheliomatous ulcer on right side of tongue posteriorly; oval in shape, and about $1\frac{1}{2}$ " in largest diameter. Fixed glandular swelling on right side of neck, just below jaw, about size of a small cocoanut	March, 1877.—Noticed small sore on right side of tongue. About the same time swelling appeared below jaw. Painless
15	Patrick McN., st. 59, bootmaker. April 4, 1878.—An ulcer on floor of mouth and under surface of tongue, and spreading to the right of the frenum; a small warty growth on left edge of tongue behind the ulcer; there is an enlarged gland below angle of jaw	Jan., 1878.—Disease began on left side of floor of mouth
16	William E., st. 53. No cancer in family. Never had syphilis. Lost flesh of late. March 14, 1878.—There is a very extensive ulcer involving left side of soft palate and floor of mouth, as well as left part of tongue; base of ulcer gray and sloughy; margins much and widely indurated; the induration of the tongue spreads across to the right side of median line. Enlarged glands beneath left angle of jaw	Jan., 1878.—Just noticed enlarged gland beneath left angle of lower jaw, with pain in swallowing. In Feb., 1878, left side of tongue and gums on left side sore

ected during the course of disease.	Preceded by ichthyosis or not.	Date and cause of death and post-mortem conditions.	Duration of disease.	N
—	—	—	—	11
cervical and submaxillary glands	Death July 27, 1876. Posterior third of tongue was occupied by a large and deep ulcer of triangular shape, involving nearly whole substance. In floor of excavated ulcer could be seen remains of two blood-vessels, one on each side of middle line. Tissues around ulceration were the seat of cancerous infiltration, especially on left side. The surface had a greyish-white appearance and whole of root of organ nodulated. Infiltration extended to tonsil and left palatine arch and left half of velum. Some nodules on anterior surface of epiglottis, causing this structure to be fixed in a semi-depressed position. Some oedema of aryteno-epiglottidean folds. Cervical glands on left side infiltrated. Lungs engorged. Masses of lobular pneumonia on periphery of each lung in a state of red hepatization	14 months	12	
lymphatic glands	None	April 28, 1877.—From bronchitis; at own home	9 months	13
lymphatic glands	None	—	—	14
ad into hospital on May 1st not heard of after 1st, 1878	None	—	—	15
—	Dorsum of tongue covered by a thick fur	May 31, 1878.—On left side, involving post. $\frac{2}{3}$ , is a wide and deeply excavated ulceration, with overhanging and infiltrated margins and base formed by sloughs and greyish-green shreds of tissue. Ulceration extends to root of tongue. Cervical glands on left side enlarged, white and friable. Lungs non-adherent, pale, and emphysematosus. Lining membrane of bronchi thickened	4 months	16

TABLE II.—EPITHELIOMA AND

No.	Name, age, brief statement of condition when first seen.	Date and mode of commencement.
17	Sophy P., st. 64. Aug. 14, 1879.—Carcinoma linguae. The whole of the tongue is indurated, puckered, fixed, and swollen. Speech is indistinct and difficult	Commenced in July, 1878
18	Charles B., st. 69, paperhanger. Aug. 28, 1879.—Right side of tongue swollen, indurated, and fixed firmly to floor of mouth; right edge is seat of nodular and indurated ulcer; the floor of mouth is formed by a fixed, hard mass, the upper surface of which has a similar ulcer. The lower surface, on right side, projects, in form of hard, rounded masses, from submaxillary region, to which skin is firmly adherent. Very large nodular masses of enlarged glands along each sterno-mastoid firmly fixed; similar, but smaller, masses occupy the inferior carotid triangles. Complains of much pain in right submaxillary region. Gum on right side involved in ulceration	Dec., 1878.—Sore on tongue 9 months ago. Bleeding at intervals for 4 months. Has had difficulty in swallowing for 12 months. 1 month after tongue began to be sore noticed right side of neck swell, and still later left side
19	James B., st. 48, glass-cutter. June 16, 1879.—One brother died of phthisis. No cancer in family. A large swelling extends from just below lobe of ear on left side downwards for a considerable distance, forwards beyond middle line, and backwards to posterior edge of sterno-mastoid; painful, hard, not involving skin. The ulcer on tongue involves floor of mouth, and is very painful. Tongue very large, crowding the mouth, causing difficulty in swallowing; it is infiltrated throughout	Dec., 1878.—Glands in left side of neck began to enlarge, and about 1 month afterwards noticed a sore on under surface of tongue to left of tip; the sore quickly spread, and cervical swelling increased and invaded right as well as left side of neck
20	Susannah K., st. 78, widow; mother of four children. Aug. 5, 1880	Commenced 8 months ago
21	John S., st. 40, dealer in works of art. Has had syphilis and been a free drinker. No cancer in family. April 3, 1880.—Cachectic-looking man, with scalp entirely devoid of hair from alopecia areata. There is a large, irregular abrasion on right side of mouth, which had destroyed whole of right of tongue; floor of mouth also involved. At edges of ulcer disease sprouts up to level of teeth. There is a red and sloughy swelling below right side of jaw. Difficulty in speaking but not swallowing, and frequent cough. Some gnawing pain and occasional haemorrhage. Has greatly emaciated	Jan., 1879.—Noticed a small, white pimple, to which he applied a solution of alum, which checked its progress, he thinks, for a time; but gradually it got bigger and eat away the right side of his mouth. It has bled profusely at times
22	Stephen K., st. 60, bugler-major in Crimea. No cancer in family. Syphilis. Had delirium tremens. July 8, 1879.—An offensive sloughing ulcer involving the whole of right side of tongue except the tip; much induration of surrounding tissues, extending to left of median line. Enlarged glands below jaw	Feb., 1879.—First symptom severe pain, then mouth filled with blood; after this pain ceased. Since May ulcer on right side of tongue has existed, with difficulty in speech and deglutition

Affected during the course of disease.	Preceded by ichthyosis or not.	Date and cause of death.	Duration of disease.	No.
—	None	—	Known to be alive 13 mos. after commencement	17
of mouth and cervical glands		Oct. 21, 1879.—Posterior half of right ramus concealed by a spheroidal tumour size of an orange; smaller masses, discontinuous with this, seated in side of neck, and others on left side of neck. Tumour firm, of scirrhous-like consistency, bone beneath tumour carious. Floor of mouth is seat of a sloughing ulceration, which has destroyed under surface of right half of tongue. On both sides cervical glands are converted into hard, fibrous masses of same nature as that on jaw. Left lung adherent at base, where some tough, pigmented, fibrous nodules occur. Both lungs emphysematous and pigmented	11 months	18
— Haemorrhage from mouth, and subsequently recurred on several occasions	None	Aug. 28, 1879	8 months	19
, 1880.—Glands in neck involved. Tongue extremely and deeply ulcerated	None	Jan. 31, 1881.—At home	18 months	20
glands and floor of mouth	None	—	—	21
and lymphatic glands	None	Sept. 26, 1879.—Left half of tongue alone remains, the right having ulcerated away. Cervical glands enlarged and infiltrated with cancerous deposit. Lungs: right apex adherent; both lungs large, tough, and edematous	7 months	22

TABLE II.—EPITHELIOMA AND

No.	Name, age, brief statement of condition when first seen.	Date and mode of commu-
23	Richard T., <i>æt. 58.</i> May 22, 1879.—Carcinoma of left edge of tongue. Teeth decayed and covered with sordes	February, 1879
24	George R., <i>æt. 56,</i> labourer. Had syphilis. Smoked clay pipes for years. July 18, 1879.—Right side of tongue is infiltrated with hard deposit from apex to root; induration extends a little to left of median line; whole surface of right side of tongue is ulcerated. Enlarged gland below right side of jaw	April or May, 1879.— ple, size of a "pea," side of tongue; he held his pipe on t because of pain when rubbed against it. came an ulcer, and c to spread since. For weeks unable to m During this period 2 attacks of haemor
25	William O'H., <i>æt. 42,</i> labourer. No history of cancer. Has been a great smoker; always held clay pipe on left side. As far as can be seen, there is extensive ulceration of the under surface of the tongue, extending backwards to root; the whole of the floor of the mouth appears involved. Jaw is fixed; speech much impaired; dribbling of saliva; and a very offensive factor. Enlarged glands under and at angle of jaw; skin over them red; enlargement greater on left than on right side. Cachectic. Has lately lost flesh	June, 1879.—Notice on anterior part of tongue. This e increased backwar movements of jaw impaired
26	George H., <i>æt. 41,</i> applied to my cancer out-patient depart- ment, Aug. 5, 1880	Commenced 12 mont
27	Alfred R., <i>æt. 36,</i> applied Sept. 23, 1880	Began 12 months ag
28	William S., <i>æt. 49,</i> potman. Nov. 8, 1879.—Applied to me as cancer out-patient with cancer of mouth, tongue, and jaw	About 2 months be plying tongue ha feeling sore
29	William F., <i>æt. 54,</i> baker. March, 1881.—Floor of mouth, right gum, and under part of right side of tongue involved in an extensive foul ulcer. Glands on each side of neck much enlarged	Dec., 1880.—Sore in mouth, which exte gum and under tongue; cauterisal been strong and fre

Is affected during the course of disease.	Preceded by ichthyosis or not.	Date and cause of death.	Duration of disease.	No.
—	None	—	—	23
Tongue and cervical glands	—	Nov. 4, 1879.—Right half of tongue, from root to tip, destroyed by ulceration; margins everted, nodulated, and surrounding tissues infiltrated. Lower lobe of both lungs solid with edema; both contain patches of lobular pneumonia	8 months	24
Tongue and cervical glands	—	Nov. 27, 1879.—Tongue of large size; its left half was in great measure destroyed by deep ulceration, with raised, everted, and nodulated margins; the base of the ulcer being foul and sloughy. The organ felt hard, and on section was found to be infiltrated by firm, opaque, white material, which involved the whole of the tip of the tongue, and spread deeply across the middle line into the substance of the left half. The submental and upper cervical glands on both sides enlarged and infiltrated with similar opaque, white material. Lungs highly emphysematous; engorged posteriorly. Much muco-purulent secretion in bronchi	6 months	25
Melioma of tongue and submaxillary glands	None	—	—	26
Melioma of tongue; 6 mos. after glands became affected	None	—	—	27
Aug. 1878.—Admitted under Hulke. The submaxillary glands were then affected	—	Nov. 22, 1878.—Submental and left cervical glands much enlarged and infiltrated with cancer. Alveolar border of right half of lower jaw exposed by ulceration and necrosis of large portion of ramus and condyloid process. Tongue almost wholly destroyed, ragged stump remaining. Floor of mouth in an extreme degree of ulceration and slough. Slough over ulcer in larynx, and posterior insertion of each vocal cord. Right lung emphysematous and gorged; left presents a gangrenous cavity in upper part of lower lobe; also reddish-gray hepatization	15 months	28
Tongue, floor of mouth, and submaxillary lymphatic glands	None	June, 1881	6 months	29

TABLE II.—EPITHELIOMA AND

TABLE II.—THIRTY-TWO

No.	Name, age, brief statement of condition when first seen.	Date and mode of commencement.
1	Marianna K., ast. 49. April 24, 1873.—A deep ulcer involving the under surface of tongue from tip along left border; much of the left edge of the tongue has been eaten away; not much induration around; pain severe. Tongue is fixed, but there is so much swelling of tongue that it is often bitten, and when bitten it readily bleeds. Salivation profuse. Considerable induration of tissues below jaw on each side	About April, 1872, an ulcer formed on under surface of tongue near the tip. Pain. Blue stone and other caustics frequently applied
2	Mary Anne K., ast. 55, widow. Mother died of cancer of stomach. March 19, 1874.—Tongue edematous, especially at tip and left side; it projects beyond the teeth at sides and in front; the tongue is fixed. An excavated ulcer runs along the whole of the edge of the tongue. The left anterior pillars of the fauces are involved. Glands below left side of the jaw much enlarged	About Oct., 1872, a small, white, hard blister appeared on left edge of tongue, opposite a rough tooth
3	Henry G., ast. 45, gun maker. Aug. 14, 1873.—Affection of glands on right side of neck; very greatly enlarged, occupying the whole of the anterior and part of the posterior triangles of the neck. Skin over the most prominent part beginning to ulcerate. Glands on left side enlarged, but to a much less extent. Cannot protrude the tongue. On right side of dorsum of tongue is a large, foul ulcer extending to floor of mouth. Severe salivation. Edema of right forearm before death	For about 1 year (1872) his tongue has been sore all over. After about 4 months the glands in the neck began to enlarge
4	Samuel B., ast. 56, tailor. May 1, 1873.—Has bad health. Never had syphilis. There is a ragged ulcer extending from tip to near the base, involving nearly the whole of the left half of the tongue. The edges of the ulcer are raised and hard, the outer one being notched by the teeth. Sloughs are separating from the base of the ulcer. There is an enlarged gland below the left angle of the jaw. 'Brit. Med. Journal,' Feb. 21, 1874, Case III	In Sept., 1872, noticed a small, raised sore on the left free edge of the tongue, a little way from the tip. This had frequently been cauterised
5	Michael C., ast. 68, hop presser. Venereal disease 40 years ago. Good health till Christmas, 1872. June 27, 1873.—Tongue fixed; it has a beefy red appearance; each lateral border is elevated, so that a deep median fissure extends along the middle line; the front half is much indurated and edematous, and there is a hard rounded mass as large as a marble in the substance of the left half of the organ. The glands on each side below the jaw are enlarged	About Dec., 1872, speech became altered and the movements of the tongue limited; no sore on the tongue then, so far as he knows, but often felt as if "the skin was coming off the tongue and his mouth was all on fire"

Affected during the course of disease.	Preceded by ichthyosis or not.	Date and cause of death.	Duration of disease. No.
had to have operation for val of tongue and glands; he refused to do, and left hospital	The whole surface of the tongue is covered with white ichthyotic patches	—	— 30
He is insane, and on July 1881, was discharged from the hospital and sent to infirmary	—	—	— 31
hatic glands, which Jan. 1881, suppurrated and due to discharge a quantity of thick yellow matter. 20.—A number of cancerous nodules appeared in skin of chest and lower part of mouth; much sloughing of cervix; swallowing difficult. Death soon after this date, but not examined	Ichthyosis of tongue and buccal mucous membrane well-marked. Has known of its existence at least 5 years	Feb., 1881	14 months 32

TABLE III.—ICHTHYOSIS OF THE TONGUE.

TABLE III.—ELEVEN CASES OF ICHTHYOSIS OF THE TONGUE. THREE CASES OF ICHTHYOSIS OF BUCCAL AND LABIAL MUCOUS MEMBRANE.

No.	Name, age, occupation, and habits.	Duration.	Characters of the ichthyosis.	Remarks.
1	Thomas G., ast. 35; never had syphilis; a great smoker; always good health; stout and florid	4 years	On the inner surface of the lower lip near the angle of the mouth, and close to the free border, is a raised white leathery patch about the size of a fourpenny piece. The hardness is quite superficial, and does not extend to the deeper layers of the mucous membrane. Above and behind this patch and running backwards is a line with the <i>consistence of the smooth</i> , the mucous membrane is thickened, white, but not raised. Here and there on this white surface is a red spot the size of a pin's head, due to the detachment of the thickened epithelium	The condition of the mucous surface of the lip and cheek is attributed by the patient to friction against the canine tooth. There is, however, nothing peculiar or irregular about the tooth. The patient continued undertreatment for many months. Mercurials, iodide of potassium, and alkalis were tried, and failed to make any improvement.
2	Henry R., ast. 42; syphilis doubtful; smokes and drinks moderately	Many years	A raised, harsh white patch of ichthyosis, on the left side of dorsum of tongue in the area supplied by the lingual gustatory nerve	From infancy there has been a thick and sealy eruption (well marked ichthyosis) over the ears, angles of jaw, and mastoid process of temporal bones. The external ears are not perfectly formed. No history of ichthyosis in other members of family.
3	William K., ast. 57; a leather cutter; no syphilis, nor venereal affection can remember of any sort; a great smoker, i.e. has smoked 1 oz. of strong tobacco daily for twenty years; has drank freely for fifteen years	As long as he	As long as he	has a pearly white appearance but is not so much raised as the yellowish-white horny patches; no pain. But raised patches are sometimes tender to the

4	Caroline C., st. 48; housewife; syphilis doubtful	Some years	A raised, white, and pearly appearance of mucous membrane of dorsum, which was marked by longitudinal, transverse, and curvilinear lines, in a tessellated manner	Was under treatment from July to November, 1876. Alkalies were given internally with some benefit.
5	George E., st. 48, costermonger; syphilis twenty-three years ago; great smoker and spirit drinker	12 years	As much of the tongue as can be seen when protruded (certainly the anterior two-thirds) is coated with a pearly-white raised epithelium. The inner side of the cheeks here and there presents the same appearance, especially near the commissures. There is also a well-marked raised white patch extending from the inner aspect of the lower lip, close to the angle of the mouth, over the red portion of its free edge. This is where he invariably holds his pipe	Volunteered the statement that when the juice from his pipe runs into his mouth his tongue becomes very painful. There are fleshes and depressions on dorsum of tongue, some of which are superficially ulcerated. These improved whilst alkalies were taken internally and Pilule Hydragyri was rubbed over the surface; but on ceasing to use the blue pill mass they again became worse.
6	Janet R., st. 68; syphilis; there were syphilitic ulcers on the tongue when she was first seen; and they healed under treatment; had had sorethroat from time to time over a period of three or four years	Not known	The right half of the dorsum of the tongue is in a pearly white and raspy condition. There is also a long, narrow, antero-posterior streak of white, raised, harsh epithelium on the left half of the dorsum of tongue	Was under observation from time to time from February, 1877, to October 28th, 1880. When first seen, in addition to specific ulcers on the tongue, there were ecthymatosus sores on head and neck. Remedies (antisyphilitic) were uninterruptedly given for many months. Meanwhile, the white, raised, <i>plaque</i> on the dorsum spread until it occupied a great part of the centre.
7	Wm. C., st. 38; syphilis nineteen years ago	5 years	Ichthyotic coating over anterior part of dorsum; surface white and pearly, not raised; marked by linear depressions in tessellated manner	Has had specific ulcers on the tongue off and on for the last 5 years.

TABLE III.—ICHTHYOSIS OF THE TONGUE

No.	Name, age, occupation, and habits.	Duration.	Character of the ichthyosis.	Remarks.
8	Edwin J., st. 50, shoemaker; chancres on penis, but no secondary symptoms, twenty-eight years ago; no family history of skin disease or ichthyosis lingue. For ten years has suffered from a constantly recurring acruly eruption on face and head, associated with a patchy whitening of the tongue and occasionally with painful small blisters on edge of tongue. Twelve months ago was under Dr. McCall Anderson for eczema of face, head, and ears, from which he recovered in six weeks. Tongue worse since then	10 years; worse during last 12 months	Ichthyosis of a pearly white character, of triangular area, involving the apex and extending backwards upon the dorsum. There is increased development of papillæ and thickening of the epidermal layer. On the posterior two-thirds of tongue is a thick fur overlying large and hypertrophied papillæ, which are thickly set against one another, and with finger nail can be made to stand erect	In front of left auricle, and just within the helix, are two brownish-red, scurfy spots, with the slightest possible trace of moistening here and there on the surface. When admitted, on April 26, 1877, there were three or four superficial ulcers on the dorsum, the largest of which was the size of a horse-bean, and abutted against the base of the ichthyotic patch. Remained under treatment for one month, taking Liq. Arsenicalis miw., Pot. Bicarb. gr. 1, Inf. Calumba. 3 <i>ij</i> , b. d. s., and using blue pill mass on tongue. Ulcers healed. Ichthyosis remained <i>in status quo</i> .
9	George McC., st. 64, fish salesman. formerly, now a linkman; syphilis in 1863, but denies all constitutional symptoms. Drinks largely of raw spirits, and has done so since his eighteenth year. Has drank as many as eight or nine half-quarters before breakfast. Smokes 1 oz. of shag tobacco a day out of a short, stale pipe; a new pipe makes tongue smart, so also does juice from pipe. ( <i>Drawings</i> show ichthyosis and ulceration of tongue and ichthyosis of buccal m. m.)	17 or 18 years	Tongue covered with a scanty bluish-white coating of epithelium, in some places thicker and faintly raised; but nowhere are the papillæ enlarged. Ichthyosis is nowhere of very declared type; it is not raised into a plaque; it is not so harsh and rough as is frequently the case. Its characters are better marked when the surface of the tongue is dry. The buccal mucous membrane also is ichthyotic	Mustard, pepper, a new pipe, and the juice of tobacco, have given pain in the tongue for 17 or 18 years. At times tongue looks whiter than at others. For years has had occasional superficial sores on it, and there are fissures, the traces of old sores. No skin eruption at any time. For 4 or 5 years I have watched this man's tongue. It has not varied much from time to time, but when last seen (April 4th, 1882) there were a group of small superficial abrasions or ulcers close together, and near tip.

## 10 Elizabeth K., æt. 32; syphilis

Admitted to be treated and watched for an ulcer larger than a sixpence on centre of dorsum, near ichthyotic plaque. The ulcer healed under specific treatment.

11 Mary M., æt. 60, a widow; no evidence of syphilis; every reason, from appearance, surroundings and habits, to think there is no specific taint

3 or 4 years A small, raised, white, rounded plaque, the size of a split pea, projects from the mucous surface of the left cheek. The mucous membrane around it is white and pearly, and a linear streak of white epithelium extends to either alveolus. There is no infiltration or induration of sublying tissue.

On the right cheek, spreading from the commissure of the lips, and covering about half the buccal surface on this side, and also extending along the mucous surface of the upper and lower lips is a raised, white patch, most prominent at the junction of the upper and lower lips. Here it forms a thick, prominent raised ridge, which is often caught between the teeth

6 months; probably much longer

25 years

13 David C., æt. 61, a cutter out of boots; syphilis thirty years ago; used to smoke a great deal, but has given it up for seven or eight years. Temperate, but drinks his whisky raw and swallows the water afterwards

Has lost all her teeth, and for years has worn a plate on each jaw. Has had much done to teeth during last six months, and meanwhile the ichthyotic plaque has got much more prominent.

For 6 months has been unable to eat on right side for fear of catching the ichthyotic patch between the teeth. Plaque is sore when touched with finger. Owing to the inconvenience it caused him I removed the ichthyotic area of mucous membrane. Patient left the hospital well in a week, and has not been seen since.

1883. He has been seen again with ichthyosis of the cicatrix, but no cancer.

Near the right edge of the tongue is an irregularity of surface, which looks like the remains of a former ulcer. Iodide of potassium and cinchona were tried for some time (March, 1882). He has been much reduced in circumstances, and has lived very abstinently for a long time (March, 1882). The ichthyotic patch on tongue is certainly smaller than it was. (Drawing showing patch, April 1, 1882.)

TABLE III.—ICHTHYOSIS OF THE TONGUE.

No.	Name, age, occupation, and habits.	Duration.	Character of the ichthyosis.	Remarks.
14	William W., st. 65; change on penis forty years ago, but not followed by any constitutional symptoms; not intemperate; a smoker	3 Years; 8 weeks, epithelium of the lower lip	The dorsal surface of the anterior half of tongue is almost entirely covered by raised papillary up growth, of a yellowish-white colour. It is marked out into lobules by some deep fissures, so as to look like "bosses" of thickened and sodden epithelium, or of very thick fur. In front of this raised mass the surface of the tongue is milky or pearly-white. In one or two spots there is a bright redness owing to detachment of epithelium	Six months ago had a small sore on the right side of the lower lip, which healed. Eight weeks ago a rounded, raised, warty-looking and indurated sore made its appearance on the left side of the lower lip. Specific remedies were tried, but failed; the ulcer getting larger, harder, and deeper under its use. V-shaped portion of lip removed, Aug. 17th, 1881. Tongue remained in state two when last seen, Sept. 28, 1881. He was to return if it ulcerated, or became sore, also if disease recurred in lip or glands. 1883. He subsequently died from cancer of glands of the neck.

May 1st, 1882.

#### THE ANNUAL ORATION

“ON THE FOUNDERS OF THE MEDICAL SOCIETY OF LONDON.”\*

Was delivered by the Orator, E. SYMES THOMPSON, M.D.

\* Printed by the author at the request of the Society.

## 110TH SESSION.

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*October 16th, 1882.*

THE PRESIDENT (Mr. Francis Mason), in taking the chair, made a few introductory remarks, with especial reference to the extensive alterations that were being carried on in the Society's premises. The Fellows would remember that when he had the honour of taking the chair as President for the first time, in March last, he hinted that the Council were contemplating taking additional premises in order to provide increased accommodation for the library, as well as to add to the comfort and convenience of the Fellows. He was now happy to say that that project had been realised, and he believed that, after the completion of the work, the Society's rooms would be second to none in the metropolis. He passed a well-merited tribute to the two honorary secretaries, Mr. Edmund Owen and Dr. Isambard Owen, for the zeal displayed in the negotiations, and concluded by reminding the Fellows of the claims the Society had on their support.

WHOOPING-COUGH; ITS PATHOLOGY AND TREATMENT.

By THOMAS M. DOLAN, F.R.C.S. (Halifax).

*Abstract of the Essay, for which the Fothergillian Gold Medal of 1882 was awarded.*

It was easy to frame a definition of whooping-cough, but a recapitulation of symptoms was not an explanation.

He would endeavour to throw what light he could on its true pathogenesis. He could not dwell upon all the theories advanced, but he would devote a little attention to the views of Dr. Gueneau de Mussy in order to make them the basis for his objections against a large number of theories.

The theory of M. Gueneau de Mussy, that the malady was a

bronchial adenopathy, characterised by enlargement of the tracheo-bronchial glands with compression of the pneumogastric, did not appear to him to account for the phenomena of Pertussis. He shared in the objections raised by M. Colin, Hardy, Blot, Woillez, in the discussion at the Academy of Medicine, Paris, and by Drs. Barlow and Burney Yeo at the Pathological Society of London.

The tracheo-bronchial glandular enlargement was not always present in pertussis, and when from various causes apart from pertussis these glands have been enlarged, the pertussoid cough has been absent.

The contagious character of whooping-cough could not be explained by any theory of location in the nerve-centres. Looking at all the phenomena and the symptoms, whooping-cough presented certain resemblances to those diseases the causes of which were now believed to be minute organisms or fungi. It was highly contagious; it had its periods of incubation, of effervescence, and of defervescence; it ran a regular course; it rarely occurred more than once in the same individual.

On the grounds of analogy, then, and of some ascertained facts, he would place pertussis in the group of diseases caused by protophytic fungi. Linnæus foreshadowed modern views when he endeavoured to prove that almost all diseases were produced by animalculæ or had an insect origin. The insect of Linnæus was the microbe of Pasteur; two great minds thus arrived at the same conclusion.

Other observers, such as Poulet, Letzerich, and Binz, suggested the fungoid nature of pertussis. So far back as 1867, M. Poulet found in the sputa of pertussic patients what were then termed Infusoria, belonging to the class Bacterium-bacillus.

Letzerich had produced whooping-cough in rabbits by inoculating the trachea with sputa from the human subject.

Repeating experiments like those of Letzerich on rabbits, he found that the blood did not produce any effects, but that the sputa and other secretions caused death. Microscopic examination of sputa revealed ordinary bacteroid forms, but, in addition, he had observed a microbe, to his eye somewhat resembling the spirochæte plicatilis of Cohn. He had been assured that this microbe was a delusion, and could be accounted for by the personal equation which must always be allowed for in microscopic work; viz. the desire of the observer to see in the field of the microscope what he wished to see.

Since this essay was written Koch had discovered the tubercle bacillus. Improved methods of staining, such as those of Dr. Heneage Gibbes and others, more readily exposed these minute organisms. By the application of similar methods he believed that the special microbe of pertussis would be revealed.\* Admitting the fungoid nature of pertussis, the contagious nature of the malady was easily explained. The nasal secretion, sputa, &c., contained a well-characterised toxic principle. The sputa confined this: germs were thrown off into the air. These germs entered by some of the channels by which other contagia entered. They developed in the blood, setting up constitutional disturbance, and subsequently attacking the pulmonary epithelium, gave rise to all the phenomena of pertussis. From the lungs the contagium was again thrown off.

In pure uncomplicated whooping-cough the scalpel of the most practised anatomist failed to detect any characteristic or pathognomonic lesion. This was not surprising, and lent support to his hypothesis. The simple disease whooping-cough is rarely fatal; the complications killed, and they were numerous. In his essay he had, as far as possible, discussed the pathology of the usual complications. Time would not allow him to dwell upon them.

It was believed that the urine was very frequently saccharine. He had examined the urine of fifty children with confirmed whooping-cough, and found traces of sugar in fourteen cases only.

\* Whilst this abstract was printing, Dr. Burger (Bonn) has been working at same subject, and, according to the 'Berliner klinische Wochenschrift,' No. 1, 1883, has described the special micro-organisms of Pertussis. They appear under an immersion lens vii, ocular O, of Seihert's, Krappt,' as small elongated elliptical bodies of unequal length, the smallest being twice as long as broad. Under a very strong power, transverse sub-division can be detected in the longest specimens. They may form chains or groups, but are generally isolated and scattered singly all over the field. They bear a certain resemblance to *Lepothrix buccalis*, the spores of which are often found in whooping-cough sputum; but the latter are larger and stouter, and near them the filiform mature lepto-thrix is always present. Occasionally, some of the specific bacilli are found to be inside the mucus-cells in the sputum. The bacillus is easily prepared; it can be readily recognised if coloured in the usual way by watery solutions of aniline—fuschin and methyl-violet were employed by Dr. Burger; and as in the case of *Bacillus tuberculosis*, this micro-organism is best studied when mounted dry. Dr. Burger concludes that this bacillus is the actual producer of pertussis, because it is so abundantly produced in whooping cough that its influence cannot be doubted, because its abundance increases in direct proportion with the severity of the disease, and because the course and symptoms are best explained by the development of this fungus.—(Author's note.)

This theory harmonised with some of the methods of treatment advanced, and rendered them intelligible. The key-note on treatment had been struck by Sir Thomas Watson. Before considering treatment he would devote some time to the question of prevention. There had been no systematic attempt made to limit, check, or stamp out whooping-cough.

If it were possible on the same day to isolate all the children suffering from this disease in England, and to keep them in quarantine for a lengthened period, whooping-cough might be stamped out. This he knew was impracticable. We might, however, do much to check and limit it; but without the assistance of the public we were powerless. Contagion was what we had to contend with in whooping-cough. The public should be instructed in the general principles of prevention; these he sketched. Whooping-cough, like all the other zymotic diseases, taught us one lesson, the dependence of one class upon another. If we threw a stone into a pond a very well-known phenomenon occurred. The water was disturbed; very soon circles might be seen radiating from the disturbed centre; the circles increased, grew wider and wider, until they were ultimately lost to the perception of the eye; each circle bore a geometrical relation to the preceding circle, all owed their origin to the primary point at which the stone sank out of sight. When whooping-cough or any other infectious disease occurred, from the tainted centre waves or circles might be thrown off; those waves might increase, might grow wider and wider, and, unlike the mimic circles on the pond, might carry with them disease, misery, and death. Those waves did not respect old or young, rich or poor, the prince or the peasant. They all bore a relation to the primary case, so that every class had an interest in confining the operation of the primary disturbance. If each man discharged his individual responsibility there would be no excessive individual sacrifice, if everyone considered his neighbour, how easy it would be to check infectious disease! All followed in a continuous chain of duty and self-interest. By the isolation of the first case of whooping-cough in any house or street by the observance of the general directions given, a limit would be put to the spread of the disease. One family would have to exercise a little self-denial, and a little self-sacrifice would be involved, but the general gain to the community would be great indeed.

Approaching the subject of treatment proper, he stated that the scientific physician did not pretend to cure (in the sense in which

it is commonly understood) scarlatina, measles, typhoid fever, small-pox, but like the helmsman at the helm of a ship, strove to guide their course, to pilot his patients safe to land, to recovery, avoiding the reefs and rocks, or the complications which might arise. Great skill was required in this process, even though all the above diseases tended naturally towards recovery. Whooping-cough, like measles and scarlatina, would run its course. We had no power over its incubation or its development, but we had great power over its issue.

As he had previously pointed out, we could by a modified form of isolation and quarantine prevent the spread of infection. By improved hygienic arrangements we could place the patient in the most favorable circumstances for recovery; we could relieve certain painful and prominent sources of trouble; we could guard against complications; in a word, by the employment of rational measures, we could assist nature in her efforts to throw off the disease; and this was the highest power we possessed in dealing with the majority of diseases of this class. He described a plan of treatment and gave a copious formulary. In all plans of treatment certain modifications must be made on the occurrence of exceptional phenomena. Every plan of treatment must be modified to suit the age, constitution, and the environment of the patient. For instance, we could not pretend to treat a delicate strumous infant with whooping-cough in the same way as we would treat a robust, strong, and healthy infant; nor would we use the same measures for an infant that we would employ for a child of two or four years of age. An empiric might make a fortune even at the present day by announcing that he had a cure for pertussis, and if he were to make up a mixture with bromide of potassium or ammonium, and advertise it with the same spirit of enterprise with which Holloway and Eno have pushed their pills and "fruit salt," the same rich reward would almost certainly follow.

Treating the subject from a scientific standpoint, and apart from empiricism, he was forced to agree with Dr. Dickinson and other older physicians, who taught that there was no specific, and that we must be content with guiding the disease through its course. His views were in harmony with the temper of medicine in modern times. It was not derogatory to true progress to recognise the Hippocratic, *Vis Medicatrix Naturæ*. It was something to be able to estimate the physiological disturbances going on

in virus-diseases, the heat, the waste, the increase of heart and lung action, the altered functions of secretion and excretion, and to have the power of directing and controlling physiological action, though we could not arrest or neutralise the specific organisms which are at work. It was something to know the nature of the organisms we had to deal with; it was something to feel proud of, that, by the aid of sanitary science, we could prevent such diseases, though they depended upon entities which cannot be cast out after the incubatory stage.

The true pathogenesis of pertussis might not have been pointed out; yet his views, if adopted, afforded a wide sphere for activity. We could relieve certain symptoms as they arose; we could alleviate, we could palliate, and we could prevent. To counteract the causes of disease was the highest triumph of our art.

There was a true and false medicine—the true consisted in “knowing how much we know,” the false in pretending that all the arcana of disease and nature were open to us. The true was noble and honest, the false was ignoble and dishonest.

In the interest of the true it was better to unhesitatingly declare that there was no specific for pertussis, and to show the reason why. This he had endeavoured to do. In the interests of little patients he should have been pleased, had facts allowed, to write that there was a specific for pertussis; and whenever it was found he should hail its advent with joy, and gladly put it to the proof. It would be a pleasure, in this case, to be convinced of holding erroneous views.

Meantime, waiting for the specific, he submitted his own method of treatment to the consideration of the profession, and, in the words of Horace, said :

“ . . . Si quid novisti rectius istis,  
Candidus imperti; si non, his utere mecum.”

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*October 23rd, 1882.*

#### CRANIAL OSTEOPHYTES IN CONGENITAL SYPHILIS.

Dr. RADCLIFFE CROCKER showed the skull-cap of a child, aged a year and ten months, with well-marked osteophytes from congenital

syphilis. The living case was shown last year with extreme anaemia, enlarged spleen, and cranial thickenings, but with no other signs of syphilis. The family history of miscarriages and early deaths was corroborative. The child died from bronchitis. The thickenings were well marked over the frontal and parietal eminences, and on each side of the sagittal suture posteriorly. The borders of the anterior fontanelle were quite thin. The rough drab-coloured surface of the new bone was in marked contrast to the smooth, white, healthy bone.

The PRESIDENT thought there was very little evidence of congenital syphilis in the case; and

Dr. CROCKER said that he relied on the anaemia and enlargement of spleen for his diagnosis, which was confirmed by the existence of the cranial osteophytes.

#### A CASE OF GASTROSTOMY.

By FRANCIS MASON, F.R.C.S.,  
PRESIDENT.

THE PRESIDENT related the particulars of a case in which he had performed the first stage of gastrostomy. The patient was a man aged sixty, who had carcinoma of the left tonsil, which was growing so rapidly as to interfere with deglutition and respiration to a dangerous degree. The general details of the case had already appeared in the 'Lancet' of October 14th, 1882; the specimen showed the kind of union that had taken place between the parietal layer of the peritoneum and the visceral layer of the stomach, the adhesion not being sufficiently strong to justify opening the cavity of the stomach. Had life been prolonged a few days the union would probably have been thoroughly solid. Death took place on the third day after the operation, partly it was thought from exhaustion, but directly from a sharp attack of dyspnoea, for which tracheotomy was performed with temporary relief only.

Mr. BRYANT said it was important to determine when the second part of the operation—viz., the perforation of the stomach—should be performed. The parietal peritoneum should be included in the stitches, of which six or eight should be put in close together. Four should be stout, the rest fine ones. His own experience was too small to accurately fix the date for opening the viscera. In one successful case of his, vomiting displaced the adhesions and one of the stitches before the incision was made into the stomach; he therefore delayed the second part of the operation. In some cases the stomach may be opened on the third day, but if the adhesions are not firm it should be left till the fifth or eighth. In a case of ovariotomy performed by him fifteen or

twenty years ago, treated with the clamp, death having occurred on the third day from bronchitis, the abdominal cavity was found to be already closed by adhesions from the external wound.

Mr. GOULD had had lately two cases of gastrostomy. In the first the stomach was opened on the third day with difficulty, for the mucous membrane was corrugated and separated from the muscular and serous coats. The tenotome had to be introduced quite up to the hilt before perforating it. Death occurred from peritonitis forty-eight hours after; the adhesions were extremely slight. The patient was in a state of extreme starvation. He expected to find the stomach thinned; and he had therefore been led to make the stitches too shallow. In the second case the dyspnea was first relieved by tracheotomy. The stomach was opened on the eighth day after the first part of the operation, and food was introduced several times a day. Peritonitis set in two days after, and death took place on the fifth day. The adhesions were firm, and the cause of the peritonitis was not apparent. Perhaps the injections of food were too large and too frequent.

Mr. E. OWEN preferred Mr. Mason's course of waiting and performing gastrostomy when necessary to that of excising the tonsils.

Dr. HEYWOOD SMITH asked how the antiseptics were managed, and spoke of the value of the eucalyptol spray in abdominal operations.

Mr. BRYANT had introduced his plan of the two stitches to obviate the difficulty met with in Mr. Gould's case. Much care should be exercised in feeding, and for the first few days only warm milk should be given in small quantities.

The PRESIDENT, in reply, said that he had no experience of the eucalyptol spray; his patient suffered from carbolic poisoning, though the exposed surface was so small. The spray was used throughout the operation. As regards the number of stitches, he thought four were enough, and in this case they were closely set. In the future he should use two needles—a surgical needle to go through the abdominal walls, and an ordinary sewing needle to perforate the stomach.

#### ON INFLAMMATION, SUPPURATION, AND ULCERATION OF THE TONGUE.

By T. BRYANT, F.R.C.S.

INFLAMMATION of the tongue, when deep seated and general, is a grave affection, since the swelling which accompanies it is often so sudden and severe as to threaten life by suffocation. Such cases are, however, rare ; I have seen but one.

I say this, excluding from consideration those cases of sudden enlargement of the tongue the result of salivation from mercury or iodism. In these the symptoms, though severe, as a rule subside rapidly, under local treatment, on the removal of their cause.

In rare cases, however, the tongue may slough off after ptyalism.

Inflammation of the tongue, when local, may be acute or chronic. It may follow an injury, as in Case 1, or come on without any other

assignable cause than cold or exposure. It may begin as a sudden swelling of one half of the organ, associated with constitutional symptoms of fever, &c., or it may show itself simply as a chronic enlargement of the part, with few, if any, general, and no more local symptoms than are to be explained by the mechanical enlargement of the organ.

The disease, however, under both circumstances, is not dangerous; since it is well amenable to treatment, and has a tendency towards recovery. I have seen many examples of this affection and in all a good result took place.

The following are the brief records of such of the cases as I have preserved.

**CASE 1.** *Abscess of the tongue following an injury received three months before.*—Ellen H—, a healthy-looking child, æt. 2½, was admitted into Lydia Ward, Guy's Hospital, under my care, on August 23rd, 1875, with a hard, oval-shaped swelling, the size of a large almond, in the right half of her tongue. It had been gradually coming for three months after a wound of the part from a piece of slate pencil.

The swelling had been painless, was hard, and apparently cystic. I punctured it with a lancet, and evacuated a teaspoonful of pus; and a rapid recovery took place.

**CASE 2.** *Acute inflammation of the tongue treated by free puncturing; no suppuration; recovery.*—Alfred R—, æt. 9, was brought to me at Guy's Hospital on October 3rd, 1864, with an acute enlargement of the right half of his tongue, which had come on two days previously after exposure to night air. The boy was ill from fever, and low from want of food. The tongue was very oedematous. I punctured it freely with a lancet with marked and rapid relief and gave salines. In one week the symptoms had disappeared and the boy was well.

The benefit of puncturing the acutely inflamed organ was very marked in this case.

**CASE 3.** *—Acute abscess in the right half of the tongue; recovery after opening the abscess.*—Luke G—, æt. 37, came under my care on September 5th, 1860, with great enlargement of the right half of his tongue. It had been coming on for one week with pain and difficulty in swallowing. He felt as if his tongue were too large for his mouth. The swelling was confined to the right side of the organ, and was fleshy to the feel. There was some general fever. I ordered salines and milk food.

On September 13th, when I saw him again, the swelling was less, but more localised and fluctuating. I introduced a lancet into the organ and let out some pus. After this a rapid convalescence ensued.

**CASE 4.** *Inflammation of the whole of the tongue followed by suppuration; cure.*—Henry C—, æt. 37, came under my care on February 3rd, 1862, with a tongue which had been rapidly enlarging for five days, and now filled the mouth. The glands beneath the jaw were likewise enlarged, and mucus flowed freely from the mouth. It was clearly a case of inflammation of the organ. On the following day an abscess burst and rapid recovery ensued.

**CASE 5.** *Chronic inflammation of the whole tongue; recovery.*—Rebecca

M.—, æt. 37, married and three children, came under my care on April 3rd, 1865, with swelling and inflammation of the whole tongue of three months' duration. The tongue was thick, swollen, spongy, glazed, and smooth, and had a very red, raw aspect. There was no history of syphilis. Under the internal and external use of chlorate of potash, with milk and slop diet, a good recovery took place.

CASE 6. *Acute inflammation of the right half of the tongue; recovery without suppuration.*—F. E.—, æt. 22, came to me on February 7th, 1870, with an acute inflammation of the right half of his tongue of three days' standing. It had come on, without any known cause, with pain and swelling; the part was greatly enlarged and looked tense; there was also some enlargement of the submaxillary gland. The swelling rapidly subsided under the internal use of saline purgatives and the local use of acupuncture.

*Treatment.*—When acute inflammation attacks the tongue as a whole, and threatens life by suffocation, free puncturing or free incisions made in a vertical direction into the organ may be required,—these openings being made with the view of relieving mechanically the turgid conditions of the vessels and of giving exit to the inflammatory fluids which infiltrate the part. Serious haemorrhage may, however, at times, follow these incisions, and in a case I witnessed of the late Mr. Poland's the result was nearly fatal.

In more local inflammations, the benefit of puncturing the swollen part is very great,—in the early stage to let out the serous fluids, and in the later to let out pus. In the cases given this fact is well illustrated.

By way of medicines salines and tonics are beneficial, but the disease has a tendency to get well by natural processes.

#### HYDATID CYST IN THE TONGUE GIVING RISE TO SUPPURATION.

The possibility of a chronic cystic enlargement of a tongue, as of other parts, being due to the presence of an hydatid should always be in the mind of the surgeon; and more particularly when the enlargement is painless, and gives rise to trouble mainly from mechanical causes. Also, when a chronic, painless globular tumour has existed in a part for some time, say months, and then suddenly increases—the possibility of the swelling being due to the presence of an hydatid which has died and given rise to suppuration should be entertained—for hydatid tumours in their early stages, in the tongue as elsewhere, give rise to symptoms of a mechanical kind, and at a later period when they die, to suppuration.

I have seen two cases of this affection; one (Case 7) occurred in

the person of a middle-aged patient, who had a chronic cystic enlargement of one side of the tongue. When the cyst was punctured a globular hydatid escaped and a good recovery ensued.

The second case (Case 8) occurred in 1881 in the person of a girl, *æt.* 17, who came to me with a *central* cystic swelling of the tongue of seven or eight months' existence. The enlargement had been quite painless and felt like a tight globular tumour embedded in the tongue.

I punctured the swelling with a lancet, and evacuated a collapsed hydatid cyst floating in pus, and a good recovery took place.

In the first case related the hydatid was turned out entire; in the second, the hydatid had died and had given rise, as any foreign body might, to suppuration. A cure in both cases took place as soon as the foreign body was removed.

#### CHRONIC SUPERFICIAL GLOSSITIS; OR SMOOTH, GLOSSY TONGUE.

A smooth glazed tongue is often met with in practice, and there can be little doubt as to its being the result of a chronic inflammation of the mucous membrane of the organ. At times it is associated with ulceration. This inflammation is in many cases due to the heat or irritating influence of a hot pipe, cigar, or spirits.

It is well described by Mr. F. Clarke ('Diseases of Tongue,' pp. 159—161). It shows itself in patches more or less oval or oblong, of a deep red colour and raw aspect, the other portions of the tongue presenting their natural appearance. The surface of these patches is smooth and glossy, though at times ulcerated. The tongue itself is occasionally swollen, and where the disease has existed for some time the patches feel thickened and as if elevated. Should the disease be checked in its progress a complete recovery may ensue, but more commonly the patches remain smooth and shining, or become the seat of a white patch.

In preparation 1672<sup>76</sup>, Guy's Museum, there is an interesting example of the affection which occurred in a man, *æt.* 49, who was admitted with pemphigus and erysipelas, in March, 1878, and who gave a clear history of syphilis five years previously.

The preparation, as described by Dr. Goodhart, shows that the tongue was changed in appearance completely. Its surface, in place of being rough looking, had lost all its papillæ, even the circumvallate, the whole being scarred over with smooth cicatricial tissue. The mucous covering of the tongue was thicker than normal, smooth and white. At two spots were ulcers, one the size of a threepenny piece,

with an indolent, unhealthy surface, the other larger and more superficial, healing. The tongue was not fissured.

Microscopically these patches "are either entirely denuded of epithelium or it is reduced to an extremely thin layer, and the papillæ are obliterated by distension." Pathologically the disease "appears to be a chronic inflammation of the mucous membrane which has gradually produced complete alteration in the characters of the epidermis and thickening of the corium and submucous tissue." Butlin, 'Med. Chir. Trans.,' vol. lxi.

The disease is constantly the precursor of a cancer.

#### ULCERATION OF THE TONGUE.

In a clinical point of view it is expedient to divide the ulcers of the tongue into the superficial and deep—since in a general sense the superficial are local, simple and readily curable; whereas the deep—which are due to the breaking-down of inflammatory, tubercular, syphilitic, or cancerous elements—are complicated, difficult to diagnose and treat, and moreover are dangerous.

The *superficial* sores include the aphthous and dyspeptic ulcers; those associated with chronic glossitis; ulcers excited and kept up by decayed or ragged teeth, as well as some due to syphilis, congenital, or acquired.

The *deep* ulcers are always either syphilitic, cancerous, or tuberculous.

#### SUPERFICIAL ULCERS.

The ordinary *aphthous* inflammation of the tongue is a common affection, and is met with in children and adults as a result of irritation of the stomach or intestines from dietetic or other causes. In feeble subjects the white aphthous spots may ulcerate and thus become the source of much trouble, and the ulceration may be extensive though rarely deep. In cachectic patients the parts may slough.

The *treatment* of these cases must be mainly determined by the cause; but in the majority, a lotion of chlorate of potash or boracic acid, with five grains to the ounce of water, and the internal administration of the same drugs with or without bark or the mineral acids, is generally sufficient to bring about a cure, though in feeble subjects this may be slow.

In the more limited affection, the local application of the nitrate of silver often acts very beneficially; and in the more chronic, quinine is of great value.

## THE SIMPLE OR DYSPEPTIC ULCER OF THE TONGUE.

This form of superficial ulcer of the tongue may be the sequel of the aphthous; but more commonly it begins as an ulcer, a result of chronic glossitis which steadily spreads. It rarely, if ever, dips into the muscular tissue of the organ, but is confined to the mucous membrane covering it. The ulcer may be inflamed, indolent, sloughing, or irritable, indeed it may vary as may any ulcer in another part of the body, and if chronic it will be indurated. Its surface, however, will almost always be smooth, and it will never display the irregular or deeply-excavated appearance of the deep sores—it will, moreover, almost always be seen upon the dorsum of the tongue, although in exceptional instances it may spread downwards; as in the following example.

*CASE 9. Simple or dyspeptic ulcer of the tongue involving both surfaces.*—Mr. L. C., a banker's clerk, at 20, came under my care on June 28th, 1860, with extensive superficial ulceration of the tongue of thirteen months' standing; it involved the surface of the organ as well as the soft parts beneath, and had the appearance of aphthous ulceration. It had been gradually spreading during the thirteen months, although at times it had improved and partially healed.

There was no glandular enlargement, nor rough teeth. His general health was good, but he said he always suffered from indigestion. He had never had syphilis. I put him on almost milk diet, and prescribed some chlorate of potash internally as well as a lotion. In two weeks the ulceration had much improved and in three it had healed. In six he thought he was well, consequently he took greater liberty in his diet and so had a relapse. He then returned to his careful form of living and in February, 1861, was well.

This patient had been teased overmuch by the much-to-be-condemned, common routine practice, the local application of nitrate of silver and other irritating local applications. He had, moreover, been given mercury in frequent doses under the false impression that the disease was syphilitic. In fact he had suffered from a want of a correct diagnosis of the nature of his case, and had been maltreated as a result.

*CASE 10.* In a patient under my care years ago who had habitually passed lithic acid in such abundance as to supply weekly my class at Guy's with specimens, the ulcer had existed for years and was indolent and superficially indurated. It was clearly due to gastric causes. By placing him on milk diet with alkalies, and using soothing, not irritating, local application, a good recovery took place, although after many months' treatment.

These two cases are the most typical I have seen of the chronic simple dyspeptic ulcer, and they fairly represent the nature, appearance, and treatment of the affection.

*Treatment.*—The only sound principle of treatment is a soothing one, and the chief good is to be gained by means of diet. This is to be regulated in the most careful manner; and all food should be

forbidden that can possibly irritate. Milk food, when it can be taken, is the best; and with it, it is well to give alkalies, such as lime water, bicarbonate of potash or chlorate of potash. Animal broths are beneficial—but little meat should be allowed. All beer and spirits should be interdicted, and when stimulants are absolutely necessary they should be given as wine well diluted.

Locally the lotion of boracic acid or chlorate of potash is beneficial, and caustics are rarely required. Of tonics the barks are the best form, but at times the mineral acids are of value.

#### ULCERS ORIGINATING FROM LOCAL IRRITATION.

These are very common in the tongue, and the fact is due to the restless mobility of the organ, and the necessary friction which it must receive from any sharp process of a broken or decayed tooth or any edge of rough tartar, or even from the presence of an exostosis of the lower jaw; for I have seen such a case, which was looked upon as cancerous.

These cases are at times very troublesome and obstinate unless their cause is recognised, and they may, and do, without doubt, often become cancers.

They may show themselves as mere blisters, or superficial ulcers—the other part of the tongue being healthy—but in chronic cases the local sore may be indurated and thus simulate a cancer. In one of the two following cases the ulcer had existed two years.

**CASE 11.** *Ulcer of the tongue of two years' standing.*—Jane W—, æt. 40, came under my care at Guy's on February 16th, 1865, with an indurated ulcer on the right side of her tongue of *two years' standing*. It was about the size of a sixpence. A sharp tooth was in close contact with it. This was removed and the ulcer rapidly healed.

**CASE 12.** *Simple ulceration of the tongue from the irritation of a tooth.*—Eliza C—, æt. 53, came under my care at Guy's Hospital on May 13th, 1861, with an indurated circular ulcer on the left side of her tongue of one month's standing. It had been regarded as a cancer by another surgeon and excision had been advised—on that account she came to me. The ulcer was circular and somewhat indurated, but not raised; it was clearly in close contact with a badly decayed and rough tooth.

The tooth was removed and a lotion of chlorate of potash given; and in one month the tongue was well.

Some subjects are more susceptible to irritation than others, and I have known a patient to have repeated blistering and ulceration of the tongue from the irritation of a rough decayed tooth after sleeping on the affected side. The mere weight of the tongue against

the tooth and the unconscious friction between the two parts in contact proved enough to produce a blister in the soft parts.

*Treatment.*—The mere knowledge of the cause of this affection suggests the remedy—namely the removal of the cause—the removal of the point of irritation when possible, and the extraction of the tooth when nothing less is sufficient. Indeed as a general rule of practice the surgeon should always advise the removal of any local source of irritation from the tongue as from any other part of the body—for such is without doubt the cause of the majority of local cancers.

#### INFILTRATIONS AND DEEP-SEATED ULCERS OF THE TONGUE.

I have of necessity grouped these cases together, for the majority of the deep-seated ulcers of the tongue begin as local infiltrations and are due to the subsequent breaking down of the infiltrated and infiltrating material.

The group consequently includes cases of syphilitic disease, of epithelial cancer, and of tubercular disease of the tongue, each of which claims a distinct notice.

#### SYPHILITIC DISEASE OF THE TONGUE.

This shows itself in many ways and under many circumstances. Thus it may occur as a *congenital affection*; and appear either as a mucous patch on the tongue associated with other constitutional symptoms, or as a deep fissure, as recorded by Dr. Barlow—‘Path. Soc. Trans.,’ vol. xxxi, or as a superficial ulceration. Of the former kind I have seen several examples; of the latter but one, and that through the kindness of my colleague Dr. Goodhart, in whose practice it occurred.

*CASE 13. Congenital syphilis with ulceration of the tongue; laryngitis, pneumonia; death.*—Wm. M.—, st. 4 months, was admitted into Lionel Ward, Evelina Hospital, on April 1st, 1882, under Dr. Goodhart.

He was one of six children, all the others being healthy. The mother had, however, three miscarriages between the last three children. He has always been an ailing child, but was fairly well up to a month ago, when the roof of his mouth became sore, producing a sore nipple in his mother; he was then fed on biscuits and bread, and has wasted ever since. The “snuffles” were noticed at the same time that the mouth became sore, and also a slight punctiform eruption over the nates and scrotum. He has had diarrhoea during the last month, and occasionally vomits.

*Present state.*—Pale and emaciated, skin dry and scurfy, purulent ozæna, decided snuffles and breathing of a croupy nature; no crano-

tabes, fontanelles rather depressed. Rash on nates and scrotum consisting of clean punched-out dry sores, one on each side of the anus and one on the right side of scrotum; also large brown discolourations in various places but chiefly over the scrotum. Weight 8 lb., 10 oz. Thrush over roof of mouth, bleeds when detached; gums pale; throat apparently normal. Heart and lungs are healthy, no enlargement of liver or spleen.

The child was collapsed on admission. Brandy was given. Sores at anus dressed with powdered iodoform.

April 2nd.—Temp. 101.6° during night, child slept well, breathing rather bad at times, relieved by turpentine stupes. Warm bath at 7 a.m., temperature being 103.6°; this produced a fall to 97°.

3rd.—Temp. 102°; pulse 160; skin hot and dry; takes milk  $\frac{1}{3}$ , with water  $\frac{1}{4}$ , well; no sickness; breathing easily. Ung. hydrarg. applied on flannel. There is loud bronchial breathing over the left base as high as the angle of the scapula, but no decided dulness. Vapour bath given of calomel gr. viii.

5th.—Vapour bath has been repeated, and hydrarg. c. creta gr. j., at night in addition. Rash on nates much improved in appearance. Breathing became oppressed towards evening and difficulty in swallowing appeared. Slightly convulsed; died quietly at 12.30 p.m.

*Post-mortem.*—Body emaciated; on comparison of the two knees the left is seen to be distinctly enlarged just above the epiphysis; on removing the soft parts, the periosteum is adherent and coated externally by fatty looking material; on vertical section of the bone, a mass of white new bone was seen surrounding the lower part of the femur immediately above the cartilaginous epiphysis; a section of the other femur was made in the same way and nothing of the kind could be seen. No enlargement of any other bones could be detected.

*Tongue.*—A semilunar ulcer exists on the posterior third of the dorsum in the median line, with slightly thickened edges. *Larynx*: slight oedema of aryteno-epiglottidean folds; on opening the larynx by a longitudinal section made down the posterior wall, a vertical ulcer was seen about  $\frac{1}{2}$  inch long and  $\frac{1}{8}$  inch wide, perforating the thyro-hyoid membrane and leading into a cavity of some size in front of it, beneath the muscles, the walls of which were thin and membranous; trachea appeared normal. *Lungs*: considerable consolidation of left lower lobe, due to combined collapse and broncho-pneumonia. On the right side the lower lobe was solidified, chiefly from collapse, but with a few patches of broncho-pneumonia. *Liver* large but normal. No reaction with iodine. *Spleen* and *kidneys* normal.

Calvaria healthy, brain substance normal, the membranes over the pons were a little woolly-looking as if indicating early meningitis. Vessels appeared to be perfectly normal.

As an acquired disease, syphilitic disease of the tongue shows itself either as a mucous patch, or as a more or less extensive local infiltration of the tongue with gummosus deposit, the breaking down of which leads either to superficial sores, or to fissures, or to deeply excavated irregular ulcers, and later on to the indurated and irregular cicatricial tongue.

In some instances the gummosus material is either poured out soft

or as a solid which soon breaks down; under both circumstances appearing as a cystic enlargement in the body of the tongue. I have seen, in some cases, four or five of these cystic swellings in a tongue thus affected, and on opening the same have given exit to a thin fluid. The enlargements appear as single or multiple globular tumours in the body of the tongue.

When the disease occurs in the shape of *mucous patches*, it is usually associated with other symptoms; the patches are commonly multiple, and are for the most part situated on the upper surface and edges of the organ. They appear either as moist papules with whitish tops; as red circular or irregular excoriations, or as granulating surfaces projecting as white moist raised growths. The mucous patches in the tongue are precisely like those seen in other mucous membranes and indeed are identical with them.

They may occur with the first onset of constitutional symptoms, or not show themselves till a remoter period of syphilitic inoculation. They are very prone to reappear after their supposed cure.

When syphilis attacks the tongue as a local infiltration of gummy deposit, it usually does so long after the primary inoculation, even after twenty or more years.

It may do so as a single, or more commonly as a multiple, more or less rounded infiltration of the submucous or muscular tissue of the tongue, and the swellings may be pea-like or nut-like; at first these swellings will be hard, but as time progresses changes will occur in them. If allowed to run their course they will enlarge and break down, open and discharge; if treated they may soften and be reabsorbed, or wither and dry up, the latter change being very rare.

When this affection is allowed to run its natural course, the swelling will enlarge and subsequently break up; the hard lump will increase and become softer, the soft parts covering it will redden, inflame, and open either by an ulcerating or sloughing process; and when the contents of the lump have been discharged, either a ragged cavity will be left to granulate or a fissure to heal; the edges of the cavity or fissure being under all circumstances perpendicular and sharply cut.

The cavity, when the parts have opened by a sloughing process, will be more or less ragged according to the amount of destruction of the tissue of the tongue, and it will present a surface which will vary according to the stage of the disease. When looked at during the period of sloughing, the dead tissue infiltrated with the *yellow* infil-

trating material, of a wet wash-leather appearance, will readily be recognised; and when seen at a later period, the irregularly excavated cavity with sharply cut perpendicular uninfiltrated edges will generally enable the surgeon to diagnose the disease from the one for which it is often mistaken, a sloughing cancer. The common want of enlargement of the lymphatic glands in this specific affection of the tongue is another help to diagnosis. At a later period, when repair has taken or is taking place, an irregular, yellow, white cicatrix (leucoma) will be seen, and the tongue eventually will show marked evidence of the destructive processes of which it has been the seat. Wasting of some parts of the tongue, scarring of others, mixed up with irregular cicatricial tissue, being the chief characteristics of a repaired syphilitic tongue.

In tongues that are brought rapidly under the influence of appropriate treatment, the changes that have now been described may be considerably modified. Thus the nodular infiltrated mass may soften, and the deposited material may be reabsorbed. The tongue itself will become supple and more natural, and a cure may take place,—a cure, however, which, in some cases, is attended with a wasting of the portion of tongue that was infiltrated, or a loss of the natural papillary tissue upon the surface of the tongue which corresponds to the seat of infiltration.

What, however, is of far greater importance to remember, is, that a tongue which has been the seat of syphilitic disease frequently becomes the subject of a cancer. The altered nutrition brought about by the irritation of the one affection, encourages the development of epithelial disease. A relapse of this affection after an apparent cure is also very common.

*Treatment.*—When the diagnosis of this many-faced disease has been made, the line of treatment to be adopted is not difficult to lay down, for there can be but little doubt that some mercurial medicine is the most certain drug to employ, where there are no indications against its use; and, on this being rejected or found wanting, the iodides of potassium, sodium, or ammonium, in gradually increasing doses.

The disease must be dealt with as a general and not as a local one; and the local affection is to be read as one of the manifestations of a constitutional disorder which has doubtless other seats which have not declared themselves.

When mercury is prescribed, the perchloride, in doses of one-six-

teenth of a grain, in bark may be given ; or what I like as well—a pill of half a grain of the green iodide of mercury twice a day. In both cases the dose should be gradually raised to double the strength indicated.

When mercury is contra-indicated on account of the patient's cachectic or feeble condition, the iodides may be ordered, commencing at 5-grain doses and steadily increased week by week by a grain up to 12, 15 or 20-grain doses three times a day. The iodide of sodium may be at times substituted for the iodide of potassium. Tonics are often required at the same time, with good simple food, fresh air, and regular habits. Stimulants should be given very sparingly and all smoking should be strictly prohibited. As a local application the lotion of boracic acid or chlorate of potash (gr.  $\frac{1}{2}$  to  $\frac{3}{4}$  of water) is of value, and the recommendation of Mr. H. Morris to rub a piece of blue pill-mass once or twice daily over the surface of the sore is worthy of adoption. When the disease has apparently disappeared, the treatment must be continued for some, possibly for six, months, this practice being necessary to guard against a relapse. The routine practice of applying the nitrate of silver to these sores cannot be too strongly condemned.

In the "lumpy tongue," in the stage in which the lumps are softening, I have found the simple operation of puncturing the tumours to be of great use—the punctures evacuating the contents of the lumps, which are often serous—thereby relieving tension and certainly expediting the cure.

In cases of long standing disease, the fear of the tongue becoming the seat of cancer should ever be before the surgeon, and the fact of a tongue having been the seat of an old syphilitic affection should tend rather to support than to weaken the view of a doubtful excavated ulcer of the tongue being of a cancerous nature. At any rate where the doubt exists let it rather encourage surgical interference than prolonged medicinal treatment, for in a clinical point of view a chronically affected syphilitic tongue had better be occasionally removed than a cancerous one left to run its course.

#### CANCER OF THE TONGUE.

This distressing disease is met with in about five out of every hundred cases of cancer, and is an affection of adult life ; an analysis of 102 consecutive patients admitted into Guy's Hospital, and seen

by me, showing that 80 out of every 100 affected by it were over the age of forty-five; 12 were under forty years of age; 27 between forty-one and fifty; 31 between fifty-one and sixty; 25 between sixty-one and seventy; and 7 over seventy years of age. This disease may, however, occur as early as twenty-seven. It is more common in male than in female subjects, in the proportion of 80 to 22.

The disease is *always* of the epithelial form, and is essentially an isolated infiltration of the papillary or mucous surface. It usually shows itself as a blister, crack, ulcer, wart, or superficial tumour upon the tip or side of the tongue, and is in the majority of cases single. It then breaks down and discharges, leaving a more or less ragged, irregular, excavated sore with raised, indurated, infiltrated, and mostly everted edges.

The disease is at first always local, but later on, when allowed to take its course, it will spread and involve the floor of the mouth, fauces, gums, or jaw bone. It will, moreover, always, sooner or later, implicate the lymphatic glands.

At times the diseased parts slough more or less extensively, and in a case which was under my care in 1866, the whole organ sloughed off before the man died. It affects one side of the tongue as much as the other, and is at times central. But wherever it may commence, it will soon involve neighbouring parts.

It originates at times without any definite cause, but in the majority of cases it is excited by some local irritation, such as that caused by a broken or rough tooth, a hot pipe, an antecedent syphilitic affection, or the disease which is now known as ichthyosis.

It may originate also in a scar on the tongue, as cancer is well known to do in scars of other parts. In 1880 I saw a case (Case 14) in which the disease had attacked the tongue of a man, æt. 57, who had bitten its tip off five months before in an epileptic fit, and a second in 1875 (Case 15) in a man, æt. 70, who had injured his tongue by a fall two years before.

*Diagnosis.*—Any localised *infiltration* of the papillary or mucous covering of the tongue, however limited it may be, in a patient over forty, should be suspected to have an epithelial origin, and should it be found in a part of the tongue where no local source of irritation can be discovered, the suspicion becomes a certainty.

Should the infiltration coexist with ulceration, and a local source of irritation be made out—such as a broken or rough tooth,—the probabilities of its being due to this local irritation may be regarded

as great, but should the disease fail to undergo a rapid cure upon the removal of its supposed cause, the conclusion should be drawn that the disease is cancerous.

When a tongue has been the seat of a chronic syphilitic affection, and more particularly, one in which a series of relapses has taken place, with uncertain intervals of apparent convalescence ; and when it presents an indurated, infiltrated tissue with a more or less excavated, ulcerating, or sloughing cavity, with irregular, everted and raised, rather than sharply cut and defined edges, the diagnosis of the disease being cancerous is highly probable, and when with these symptoms the lymphatic glands beneath the jaw are found enlarged, the diagnosis becomes a certainty.

When again this local infiltration, with or without ulceration, is found in a tongue which has been the seat of an old syphilitic leucoma, or the subject of that peculiar disease of the papillary mucous membrane known as ichthyosis, there should be no question as to its true nature ; for it should be accepted as a fact that chronic syphilitic, as well as ichthyotic, disease renders the tongue peculiarly liable to undergo changes in its epithelial elements which most commonly reveal themselves as epithelial cancer.

Mr. Morris has recorded in an able paper on this subject read before this Society the fact that out of fifty-five cases of cancer of the tongue, in thirteen, or about one-fourth, the organ had been the seat of ichthyosis. I am quite prepared to support him in this average.

*Treatment.*—There is but one form of treatment of cancer of the tongue that can be recommended with any confidence, and that is the removal of the disease by some surgical operation. And there is but one period at which this operation is likely to prove successful as a cure, and that is in the early stage of the disease, when the cancer is local and when it involves no other tissues than those in which it was primarily placed.

When the disease has extended beyond these limits, and through the lymphatic channels has implicated the lymphatic glands, the prospects of a cure are not favourable even if they can be said to exist ; since, whilst the glands that lie along the ramus of the jaw may be readily removed, those that lie buried behind the angle are beyond the surgeon's reach, and to remove some of, and not all, the infected glands is a futile proceeding.

When a local cancerous disease is removed it should be a rule of practice that all enlarged lymphatic glands should be removed

likewise; and this rule is as applicable to the tongue as it is to other parts.

As to the best means for the removal of a tongue wholly or in part, surgeons are found widely to differ; one advocating strongly the removal by the knife or scissors, whilst others as strongly urge the use of the écraseur, employed either as a crushing or as a burning force. The chain, or wire instrument, is used in the former case, and the platinum wire heated by means of a galvanic battery in the latter. For many years I employed the galvanic écraseur, and found no fault with it; of late I have again resorted to the chain or wire instrument, but have had no reason to be better satisfied with my results. I altered my practice in deference to a strong opinion that has been given by some surgeons as to the dangers of the galvanic, and the greater safety of the simple, écraseur; but this opinion does not find support from facts.

With the view of testing this point I have extracted from our Guy's Hospital Records forty-six consecutive cases of operation, and find that of thirty-six patients operated on by the galvanic écraseur four died from the operation, or 11·1 per cent.; and four from other causes. Of seven patients operated on by the chain or wire écraseur, one died from the operation and one from the disease. Of the three remaining, from one of whom the tongue was removed by excision, from two by ligature, none died. Of the whole number of forty-six, five died from the operation, or 10·8 per cent., and five from other causes.

Of the five patients in cases fatal from the operation, two sank on the 8th day, one from pleurisy and the other from broncho-pneumonia; one on the 20th day from broncho-pneumonia; and one on the 20th from exhaustion and repeated small bleedings. The single fatality after the use of the chain écraseur was on the 12th day from broncho-pneumonia.

One of the five patients who died after the operation, though not from it, sank on the 36th day from recurrent disease and gangrene of the lung. Three on the 53rd, 48th, and 32nd days respectively from recurrent disease and exhaustion, and one on the 38th day from recurrent disease and pyæmia.

It will be thus seen that *three* out of the eight patients who died after the use of the galvanic écraseur, and *one* out of two who had been operated on with the chain or wire instrument, or *four* out of the whole number of forty-six operated on, or 8·7 per

cent., died from lung complication ; and the records of the pathologist tell us that such a complication is by no means infrequent when no operation has been performed. At any rate evidence is wanting to show that this lung complication is more common after operation than it is without, and that when it follows operation, such a measure has anything to do with the lung disease.

It is true that the inhalation of fetid or septic elements, when the tongue is sloughing either by natural processes or as a consequence of operation, must of necessity be prone to bring on this lung trouble ; but this fact, instead of being adduced as an argument against operative interference, may fairly be used as one in its favour, since to get rid of the sloughing and fetid organ is one of the surgeon's aims in an operation, and to do so in the quickest, safest, and simplest way is his object.

When the galvanic écraseur is used and the cauterised tissue is rendered aseptic by means of a plug of iodoform gauze well pressed upon the surface after operation ; or when the charred or burned surface, after the use of the galvanic or wire écraseur, is kept sweet by the repeated application of the colloid styptic which Mr. Morris tells us "tans the surface of the wound, causes little or no slough, and corrects the foetor of discharge," there is less fear of any evil result from septic causes than there was before the disease was removed.

There is consequently no argument against the use of the écraseur that has any weight.

Whilst, therefore, for the removal of a tongue, wholly or in part, I have a preference for the écraseur, and for the galvanic over the wire or chain instrument, I am ready to admit the value of excision by means of scissors or the knife, or of any of the different modifications of these operations which the ingenuity of different surgeons has suggested.

For I believe that in individual cases one form of operation may be more applicable than another, and that in the hands of any surgeon the mode of operating he excels in is the best for his patient.

I may say, however, that I have not yet seen a case in which the division of the lower jaw as taught by Syme has been required.

Most tongues can be removed through the mouth, however extensive the disease may be, if the organ be well drawn forward by means of a thick ligature introduced through its body, and if it is freed from its attachment to the lower jaw and fauces by the division

of its mucous membrane attachments. There is no objection to the removal of a whole tongue in halves, though there is no advantage in so doing. If more room should be required, this is best obtained by means of an incision across the cheek from the angle of the mouth, the écraseur being then worked side-ways.

Bleeding during an operation need cause no alarm, if the operation be performed leisurely, since it can be speedily controlled by the torsion of the divided artery, if the tongue be well drawn forward; in many cases the simple drawing forward of the tongue suffices to bring about this result; the artery receding into the muscular tissue.

In the following case one of the objections to the use of the wire écraseur is illustrated:

CASE 14.—In 1867, Mary M—, æt. 44, came under my care with a cancer of one side of her tongue of one year's growth. I removed it by the wire écraseur, and in doing so stretched the lingual gustatory nerve. As a consequence the patient suffered for days from intense pain in all the parts supplied by the fifth nerve. The wound, however, healed well, and a good recovery took place. The disease, however, returned in the cervical glands within six months, and destroyed life in a year.

I can see no advantage in adopting the practice of Demarquay, of ligating before the operation the lingual arteries, although when severe bleeding takes place after the operation the practice may be good. The operation, however, may be performed, in cases in which the removal of the disease is inexpedient or impracticable, with the view of bringing about wasting of the diseased organ. The division of the lingual gustatory nerve on the inner side of the lower wisdom teeth for the purpose of relieving pain is also a practice to be recommended.

It must likewise be recorded as one of the advantages of the operation, that should a return of the disease take place it is more likely to do so in the lymphatic glands of the neck than anywhere else. Under these circumstances the patient is relieved of his distressing local affection and sinks slowly and comparatively painlessly. I have often heard with pleasure, even under these miserable conditions, expressions of gratitude from patients who have gone through the operation; gratitude for the sufferings they have been saved from and spared.

I may also add that it seems probable that life is materially prolonged by the operation. In some cases I have to record, the increase was certain, and even when a return takes place it is so to a

degree. Mr. Morris states that out of fifteen cases operated upon, the average duration of life was sixteen months; whereas in those in which no operation was performed it was but ten and a half; only two cases being known to have survived eighteen months.

In the cases I now record a decided increase to life must be admitted, and particularly if we take the average of life with this disease when left alone as ten months and a half.

**CASE 15.**—In 1866 I removed the anterior half of the tongue from W. P.—, æt. 60. The patient remained well so far as the tongue was concerned for *fifteen years*; when disease reappeared in the scar. The patient at this time was suffering from hemiplegia and senile decay, of which he died.

**CASE 16.**—In 1872 I removed from Mr. S—, æt. 45, half his tongue for a local cancer. He reported himself to me as well *ten years* later, 1882.

**CASE 17.**—In 1871 I removed a local cancer from the tongue of Mr. R. W.—. No return ever took place though the patient lived *five years* and died from anaemic gangrene of the foot.

**CASE 18.**—In 1870 I operated on H. S—, æt. 70, and removed a cancer with the anterior two-thirds of the tongue. *Three years and a half* later he reported himself as well.

**CASE 19.**—In 1869 I removed a portion of the tongue from H. J—, æt. 42. He lived *two years* and had no return; and died from lung disease.

I can trace two cases now alive and well who have been operated on for *two years*, and two who are well one year after operation, and have records of three who survived the operation for 18, 18, and 11 months respectively.

Altogether the above record of facts out of a somewhat limited personal experience must be regarded as encouraging, clearly showing the possible benefit of the operation, and the probability of a cure being obtained in a larger number of cases, if the operation be undertaken as soon as the diagnosis of the local disease has been made.

The PRESIDENT said that in his experience patients seldom survived more than two years after removal of the tongue. Cases of abscess and hydatid of the tongue were rare, and so were cases of cancer in persons under forty. He had operated in a case of cancer of the tongue in a lady thirty-three years of age.

Dr. ROGERS asked why Mr. Bryant had given up the use of the galvanic écraseur.

Mr. HUTCHINSON had had similarly favorable experience in operations for the removal of the tongue in cancer. In very few cases was a second operation on the tongue required. Of course the disease returned very

frequently in the lymphatic glands. He agreed with Mr. Bryant that the galvanic écraseur was a suitable and convenient instrument, but preferred the wire écraseur because of the lesser liability to secondary haemorrhage, and because of the more healthy action of the wound after the cold écraseur.

Mr. H. MORRIS spoke of the importance of Mr. Bryant's statements as to the frequency of lung complications in cases not operated on as well as in cases operated on. Two of his own cases related in his paper last session had now lived over two years after the operation. He did not recommend ligaturing the lingual artery before excising the tongue; as haemorrhage was so easily controlled; but in a case of cancerous haemorrhage from the mouth he had ligatured both facial and lingual arteries (the former to avoid risk of secondary haemorrhage) with good result, haemorrhage ceasing, and the patient living for two years after. At the post-mortem examination the usual foul, sloughy condition of mouth was wanting. He asked if Mr. Bryant considered that abscesses of the tongue always healed readily. In one case he was surprised at the rapid healing of an abscess.

Mr. WALSHAM had also observed rapid healing of lingual abscess. He alluded to the advantage of the cord compressor in removal of the tongue in preventing secondary haemorrhage and obviating shock.

Mr. BRYANT, in reply, was himself surprised at the favorable results of his statistics of removal of the tongue. He strongly believed in cancer being local at the outset. He was not quite satisfied of the superiority of the ordinary écraseur over the galvanic, and did not recall many cases of secondary haemorrhage after the use of the latter. In one case this was due to haste in operating. In using the cord it had once snapped during the operation, and he preferred a wire to a chain. Mr. Morris's allusion to ligature of the lingual artery was valuable, and he agreed with Mr. Hutchinson as to the infrequency of local recurrence. In one case he removed what was thought to be a recurrent mass a year after excision of the tongue. The patient had since lived three years and a half without further recurrence.

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*October 30th, 1882.*

#### CHANCRE ON THE CHEEK.

By A. PEARCE GOULD, F.R.C.S.

Mr. PEARCE GOULD showed a man with a Hunterian Chancre on his cheek. The patient, a young married man, came to the Westminster Hospital ten days previously. The chancre was as large as a halfpenny piece, defined and moderately indurated, with an abraded surface. There was one enlarged gland over the parotid gland and several below the jaw. There was also an abundant roseolous rash over the trunk, and very slight sore-throat. The

chancre had been noticed altogether two months, and was now rapidly improving under mercurial treatment. The only clue to the mode of infection was the fact that he was in the habit of "larking" and taking his meals with a cousin who was suffering at the time from a severe attack of syphilis.

The PRESIDENT mentioned similar cases which he had recorded before the Society and in the St. Thomas's Hospital Reports, and laid stress upon the necessity for accurate diagnosis, as in some cases operations had been undertaken for the removal of chancres of the lip mistaken for cancer.

Mr. BOYES BELL referred to two cases, and Mr. EDMUND OWEN to another, the latter remarking on the size and spongy character of the sore in Mr. Gould's case, and its similarity to the chancres that sometimes occur on the fingers of medical men.

The PRESIDENT remarked upon the comparative rarity with which medical men were inoculated, seeing the risk they constantly ran in examining cases of syphilis.

Mr. GOULD, in reply, said he had seen a similar sore over the malar bone of a young girl, communicated by a kiss from an infected person : also another on the knee of a girl six years of age. He related a case which he had seen the previous week, where there appeared conclusive evidence of indirect inoculation through a w.c.

## TWO SPECIMENS OF CARDIAC ANEURISM.\*

By ISAMBARD OWEN, M.D.

THE two specimens are from the post-mortem room of St. George's Hospital. They are very similar. In both the anterior, outer, and part of the posterior, wall of the left ventricle is reduced to a thickness of about one-sixteenth of an inch, and somewhat distended, so as to increase the capacity of the ventricle. The endocardium lining the dilated portion is thickened, smooth and glistening, the pericardial surface is rough with firm adhesions. Microscopic sections of the wall show both the endo- and pericardium thickened with fibroid tissue ; but especially the former. The muscular layer is infiltrated with fibroid tissue, which penetrates between the fibres, themselves healthy. The internal longitudinal fibres are in both cases almost absent, a thin layer of the external ones remaining.

In the apex of the heart marked A a firm clot, the size of a chestnut, is adherent.

The ventricular wall above the thinned portion is formed in A of healthy muscular tissue, lined by normal endocardium. In B it is

\* St. Geo. Hosp. Museum, Nos. 4362 (A), and 4363 (B).

much infiltrated with fibroid tissue, while the endocardium is thickened and contains some calcareous deposit. Under the microscope, an actively proliferating layer is seen beneath the endocardium in this region.

The aortic valves of A are thickened at the edges ; the mitral valves of B are thickened, and some calcareous deposit is found at the root of the aortic.

The pericardium was adherent over nearly all the thinned part of A, over the posterior aspect only in B.

The right ventricle in A is much encroached on by fat, hardly any muscle being left in places. In B the muscular tissue remains, but the cavity is dilated.

Both are from the bodies of old men : A from that of a man aged sixty-one, B from that of a man aged seventy.

In both cases the kidneys were coarsely granular and deficient in cortical tissue ; they weighed 11 oz. in the former, 14 oz. in the latter. In the former case, the aorta was very atheromatous and somewhat dilated, and the openings of the coronaries partly blocked by atheroma ; in the latter the aorta was nearly healthy, but the cerebral and iliac arteries and the coronaries were atheromatous. The lungs in the former case were very emphysematous.

Of the case which furnished (A) no clinical details are available, the patient having been brought dead into the hospital. The other patient had suffered for seven years from shortness of breath, palpitation, and slight pain in the left side of the chest. For three years he had been unable to work. He was in the hospital for eleven days, the strength gradually failing and breathing becoming more and more rapid. An attack of facial erysipelas was the eventual cause of death. The heart's action is described as being very weak ; the apex beat diffuse, chiefly felt in the fifth space just inside the nipple line. Both sounds were reduplicated, and both weak ; there was no murmur. The pulse was weak and dicrotous ; and on admission marked 90 in the minute.

For these clinical details I am indebted to Dr. A. T. Myers, Medical Registrar to St. George's Hospital.

## SIX HUNDRED CASES OF DIABETES.

By R. SCHMITZ, M.D. (of Neuенahr).

(Communicated by LEONARD SEDGWICK, M.D.)

DR. SEDGWICK read a paper communicated by Dr. R. Schmitz, of Neuенahr and San Remo, entitled "My Experience of 600 Cases of Diabetes." Of this number 407 were males, and 193 females; 30 were below twenty years of age, 56 between twenty and thirty, 80 above sixty, and 434 between thirty and sixty years. The fact that violent emotion, mental anxiety, and excess of saccharine diet produce diabetes only in some persons was held to prove that there is a diabetic disposition, which is usually transmissible by heredity, and may be manifested in a family as diabetes, and also as psychoses, and perhaps as tuberculosis. A family tendency to diabetes occurred in 248 cases, to psychoses in 96, and to tuberculosis in 42 out of the 600 cases. A large proportion—viz., 93 cases—occurred in Jews. In 8 cases both husband and wife were suffering from diabetes at the same time. In 183 cases mental disturbance of some kind appeared as the exciting cause, in 45 cases gout, and in 22 the exhaustion consequent on severe disease. The urine was mostly clear, of a pale or light yellow colour, usually very acid, rarely neutral, very seldom alkaline; sp. gr. 1025 to 1030, never above 1042, frequently as low as 1013 to 1015. The average daily amount was 2500 c.c. to 3500 c.c., in one case as much as 9000 c.c. and in 40 as little as 500 c.c. to 800 c.c., but in these latter cases there was profuse sweating. The day urine generally contained most sugar, especially that voided two or three hours after a meal; in some cases the night urine was the most saccharine. Mental exercise or anxiety notably increased the sugar, physical exertion rather diminished it. The amount of sugar varied from 1 to 8 per cent. of the urine, rarely rising to 4, still more rarely to 5, very seldom to 6, and in only one case to 8 per cent. In some cases albumen was present to from 0·1 to 0·3 per cent., its amount often varying in inverse ratio to the amount of sugar. The albumen was increased by exhaustion and severe exercise, and after fasting, but decreased after a meal. After the disappearance of sugar there was often a material increase in phosphates, and in some, a considerable amount of oxalates; in four cases hippuric acid was present. In two cases

there was a substance present, probably a modification of uric acid, which reduced copper in the same way as sugar, the practical importance of which was illustrated by the case of a physician, who found that the "sugar test" increased when he was put on anti-diabetic diet. The polariscope and fermentation test eventually solved the problem, and the substance was found to disappear from the urine during the use of a mixed diet, to reappear when flesh was freely eaten. Dryness of the skin accompanied increased quantity of urine and emaciation. If the skin acted well there was never extreme emaciation. In 35 cases there was distinct obesity. The weakness and prostration appeared to be due to a special pathological process in the muscles; and to this muscular degeneration were owing disorders of visual accommodation, constipation, and many of the cardiac symptoms terminating in sudden death. The weak cardiac muscle caused in many cases an irregular, feeble pulse, and a very indistinct first sound, and in some, violent exercise was followed by serious symptoms, as nausea, vomiting, drowsiness, great prostration, sometimes convulsions, temporary paralysis, and loss of consciousness. In these cases it was necessary to forbid the upright posture for some time, and to administer stimulants freely. In four such cases death resulted, and also in two others, on their way from Neuenahr—in one with extreme muscular degeneration, in the other from rupture of the heart. Such cases have been miscalled "diabetic coma." They were really due to exhaustion of the heart, resulting in arterial anaemia, venous hyperæmia, and consequent carbonæmia. They might be confounded with those cases of acute poisoning called acetonæmia, of which he had seen six cases; but in these the attack was sudden, and although there was nausea and drowsiness, the pulse was regular and rapid, while Cheyne-Stokes' respiration, fetid breath, and (from the beginning) frequent paroxysms of abdominal pain, rousing the patient at intervals from his somnolence, were observed. No sugar was passed during the attack, and free purgation with castor oil, resulting in the passage of dark-coloured offensive motions, was of great service. If the patient were not relieved by purgation death generally occurred in coma; in two cases in convulsions. Whether due to acetone or not, the author was convinced that these were cases of acute poisoning from a very noxious substance developed from the decomposition of the sugar in the intestines. There were two forms of hunger—one due to excessive tissue change, the other a true neurosis, accompanied by occipital pain, and relieved by codeia

or morphia, with potassium bromide. Some diabetics have an unaccountable desire for sugar. Total loss of appetite was very rare. The thirst was a result of the polyuria, not of the glycosuria. The sour alcoholic smell—termed by some acetone-smell—was characteristic, and, except in the cases of acetonæmia, was proportioned to the amount of sugar in the urine. Looseness and falling out of the teeth was an early symptom, and was often accompanied by a spongy state of the gums; this was much benefited by rubbing the gums several times a day with a slice of lemon and the use of a gargle of sage and cochlearia. Constipation, alternating with diarrhoea, was frequent, depending not on the use of animal food but on atony of the muscular coat of the digestive canal. The diarrhoea, as a rule, began in the night, after a continuance of constipation, the faeces were fetid, watery and grey in colour, and the attack, invariably followed by great diminution in the amount of sugar, was believed by the author to be due to fermentation of sugar in the small intestine. Castor oil should be given, and, failing relief, should be followed by bismuth or tannin; opium being objectionable. Neuroses of various kinds were by no means uncommon. Cramps in the calf of the leg were frequent, and when long-continued were little influenced by local narcotics. Crural neuralgia was common; sciatic and lumbar neuralgia more rare; cervico-occipital neuralgia occasional, and in one case (in a man aged seventy-five) mastodynia occurred. Salicylate of soda and codeia had been of most use for the relief of pain. The pruritus pudendi and balanitis might be neurotic, as well as caused directly by the sugar; a lotion of salicylic acid gave most relief. Tuberculosis was developed in the course of the disease in twenty-six cases, and was persistent in fifteen others. Impotence or diminished sexual desire was common, but in twelve patients there was increase of venereal desire. Dimness of vision was partly due to turbidity of the lens, partly to loss of accommodation. Three cases of cataract occurred; they were operated on and did well. Boils, caused by the nutritive disturbances of the skin, were very common. Several cases occurred in which the sugar permanently disappeared; this and the more common result of treatment—a great diminution in the quantity—were more often met with in those attacked in middle age than in those attacked in youth, and much more often when the disease was recent than when it was of long standing. Much depended on the patient and his adherence to an anti-diabetic diet. When diabetes followed on disease of the central nervous system, tuberculosis, heart

affections, or other organic mischief, the prognosis was bad; less so when grief, anxiety, or mental fatigue had been the cause; and still less unfavorable when excess of saccharine food had produced the malady. But the most favorable prognosis was to be given when gout was the origin of the diabetes, and also in diabetes arising during convalescence from typhus.

Dr. JAGIELSKI distinguished two groups of prominent symptoms—the neurotic and the digestive, and guided his treatment by the respective prominence of these groups. The paper did not state to what extent the use of the Neuenahr water entered into Dr. Schmitz's treatment. He deprecated a too rigid diet, and said that with the koumiss treatment he had been able, after a few weeks, to dispense with the absolute deprivation of starchy and saccharine matters. Good results had been obtained also by lactic acid, butter-milk, and skim-milk.

Dr. GREEN thought the paper failed to discriminate the different varieties of diabetes, several distinct conditions being linked together by the one common feature of glycosuria.

Dr. SEDGWICK said it was clear that nearly all Dr. Schmitz's cases were at any rate not cases of temporary glycosuria.

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November 6th, 1882.

#### CONGENITAL CYSTIC HYGROMA.

By EDMUND OWEN, F.R.C.S.

IN the volume of the Transactions of the Royal Medical and Chirurgical Society for the year 1839 is a paper by Mr. Cæsar Hawkins upon the subject of the present communication. It is, so far as I know, the first treatise that we have upon these cystic growths, and I very much doubt if any matter of importance, either as regards their pathology, diagnosis, or treatment, was left by Mr. Hawkins for future writers to fill in.

Congenital cystic hygroma is by no means unfrequent occurrence, and it is strange that so little notice is taken of it in our works on general surgery.

The first case to which I will direct attention is that of the little girl that has just been examined by the meeting. She is now between three and four years old. A few days after birth her mother noticed a swelling under the right side of the tongue, which, on being shown to the doctor who attended her, was called a

"ranula." He refused, however, to interfere with it. The supposed ranula grew, extending across the floor of the mouth and amongst the muscles behind the symphysis of the maxilla, until a definite tumour appeared against the angle of the jaw. The little patient was then brought to me, when I told the mother that nothing was to be done to the tumour, which, as it was growing rapidly, might entail serious consequences. My impression is that this enormous mass has now ceased to grow. It is certainly harder than it was, though its cystic nature is still quite evident. It is not tender, nor does it apparently interfere with the child's health or with the nutrition of the skin. I am still content to watch and wait.

The second case is that of a boy of five months who was under my care at the Children's Hospital. He had a cystic hygroma of the size of a walnut in each subclavian region and in each axilla; it was doubtful whether the upper and lower tumours were in communication. Mr. Thomas Smith saw the child with me, and we agreed that no active treatment should be undertaken. When I next saw the little patient, after an interval of three weeks (the mother lived at a distance, and was not led to expect much from treatment), the upper pairs of tumours had almost met across the episternal region; there was difficulty in swallowing, and commencing oedema of the eyelids and of each upper extremity. Translucency showed the cystic nature of the superficial part of the subclavian masses. A week afterwards the mother came to tell me that the child had died on the previous day, and that the tumours had gone on growing so that at last the child could hardly breathe. She said also that the swelling of the hands and arms had gone on increasing until the day before the death, and that the legs and thighs had towards the last days also begun to swell. Her opinion was that death was caused by suffocation. No post-mortem examination was made.

Here, then, are reports of two cases of, so far as one can tell, a similar pathological nature, in one of which fatal complications brought on a sudden termination, whilst in the other a quiescence which one hopes is genuine seems to point to the fact that activity of growth has given place to spontaneous degeneration or atrophy. It is impossible to say what course a cystic hygroma may take; whether it is about to undergo immediate or future growth, or whether it is about to undergo interstitial changes which shall reduce it to a "loose pendulous bag of fat." Inflammation of the

tissues, either spontaneous or induced, will at times determine their atrophy, and from the increasing hardness in the case of the little girl, I suspect that such a change is at hand. As Mr. Hawkins remarked, some of these tumours look as if they could be easily dissected out, but to remove one from the neck the operator may have to work around the carotid vessels and possibly behind the pharynx. I once dissected such a tumour from the side of the chest, and even then I had to root it out from beneath the border of the latissimus dorsi. Mr. Hawkins suggested that the treatment should consist in puncture of the larger cysts, and in the application of pressure and counter-irritants. To this one might perhaps add that in certain cases atrophy may follow the inflammation caused by the presence of one or more setons through the mass. Probably spontaneous inflammation is their most desirable complication.

In conclusion, I would remark that, as in the first case, a congenital cystic hygroma in the sublingual region may be mistaken for a ranula, an error in diagnosis which is more likely to lead to disappointment than to damage. That in whatever situation it may occur it is apt to be mistaken for a subcutaneous nævus, or for one beneath the mucous membrane; and, lastly, that at times the resemblance to a fatty tumour is extremely close.

The second child exhibited possesses the remains of a hygroma on the arm. The patient has been three years under observation, but the mass, which now resembles a diffuse fatty tumour, was, when first under observation, of evident cystic formation. This is the only instance which I have seen of a congenital cystic hygroma situated upon an extremity; their favourite seat is the armpit, the neck, and the floor of the mouth.

The PRESIDENT was not satisfied that the tumour on the side of the cheek communicated with the cyst beneath the tongue.

Mr. BRYANT remarked that the cases were seen in a late stage, and that no communication between the larger tumour and the mouth was to be found. He advised enucleation and removal. In its present state the smaller tumour might be taken for a congenital nævus. In three cases he had noticed hygroma to be associated with imbecility.

Mr. OWEN, in reply, admitted that perhaps there was no communication between the two cysts in the first case, but he thought they were connected by fibrous tissue. In the second case, he thought the hygroma was degenerated. The difficulties of removal of the cyst in the first case were very formidable.

## THE UNITY OF SURGICAL PRINCIPLES IN WOUND AND FRACTURE TREATMENT.

By SAMPSON GAMGEE, F.R.S. ED.

WOUNDS and fractures are alike interruptions of continuity,—the former of the soft, the latter of the hard parts. They differ in the density of the tissues involved, and proportionately in the time required for reunion ; but they are essentially similar in processes of repair and principles of treatment. In wounds and fractures, division of tissue is the essential fact which gives rise to a common chain of events—mobility, disordered innervation, and effusion,—which become causes of ulterior pathological results, if their development be not checked by proper treatment. The indication, common to the vast majority of wounds and fractures, is to bring the severed parts together, and keep them so during the process of repair. How that indication shall be fulfilled—what peculiar appliances are demanded by injuries in particular situations, and by such complications as contusion, haemorrhage, and inflammation,—are questions traversing the whole domain of surgery : fit themes for a treatise, admitting only of cursory treatment in a paper for an evening's discussion. It will be my endeavour only to select for comment those salient principles and points of practice on which agreement is most to be desired and nearest of attainment.

Firstly, as to the reduction of fractures of the limbs ; that should be immediate, and maintained with the nearest practicable approach to immobility, a rule of practice to which no other in surgery admits of fewer exceptions. In selecting from amongst the numberless contrivances for maintaining immobility, preference should be given to those which admit of accurate moulding to the limb, including the joint above and below the seat of injury. It is beyond question that, with wood and iron splints, many surgeons have for generations achieved excellent results in fracture treatment ; but, for comfort to the patient and freedom from complications, moulds are best ; they can be constructed with a great variety of materials—plaster, gum and paraffin, millboard (plain or soaked with dextrine), gutta percha or poro-plastic felt. The last-named and dextrined millboard are, I think, the most handy and efficient ; but, where all are good in principle, choice may well be left to the predilection

which grows out of individual experience. Whatever splint or mould be used, let it be well padded ; and I know no pads equal to those made with absorbent gauze and cotton, which possess practically indestructible elasticity. The materials of which bandages are made, still more the method of bandaging, are of the first importance. Uniform elastic compression powerfully contributes to prevent muscular contraction, and *pro tanto* to secure immobility. It prevents extravasations, and, when they do occur, promotes their absorption. I employ pressure in the treatment of all fractures, with perfect elastic padding, light, yet decidedly compressive, smooth bandaging, without ruck or reverse. It is many years since I used one of the unbleached calico bandages common in most hospitals. Preference should be given to these soft, bleached, absorbent bandages. A depth of two inches is the handiest, the rapid spiral the most convenient, comfortable, and efficient, mode of application. In bandaging a leg, for instance, having previously padded it, a couple of circular turns are made just above the ankle. The roller is then carried along the dorsum of the foot, and a circular turn made round the roots of the toes. With a few figures-of-8 the foot, including the heel, is covered ; the roller then carried spirally along the front of the leg to the knee, here made fast with a circular turn. Alternately ascending and descending figures-of-8 complete the elastic investment. The method is applicable, with trifling variations of detail, to all parts of the body. Whenever practicable, suspension will be found of the utmost service as an addition to the means of maintaining immobility. The suspension of a limb in two or more loops of bandage or leather is not what is here meant ; that is comparatively fixed elevation, of unquestionable advantage for position, but not a perfect swing ; for this, a fine cord is even better than a chain. The greater the motility of the suspending medium, the more completely does it oscillate and exhaust any motor power communicated to the limb ; in other words, the fragments of a suspended broken limb, once perfectly adjusted, can be kept at rest in direct proportion to the perfection of the swing.

Another form of suspension, different in principle and mode of application, but still very useful, is that of suspending a weight to a limb. It overcomes muscular contraction by steadily exhausting it ; and alone, or in combination with moulds and pressure to an injured part, is of great service in maintaining immobility. Assuming so much conceded for the treatment of a simple fracture, agree-

ment would probably be less complete, if a fracture complicated with swelling, sanguineous or inflammatory, were in question. But in such a case, no less than in the simple one, should reduction be immediate, with elastic compression, absolute immobility, and oscillatory suspension. Digital compression of the main artery will assist in promoting absorption. In a very few hours the outside of the apparatus becomes loose, and its elastic construction admits of fresh padding and compressive bandage, without disturbance of parts, and with unfailing benefit in promoting absorption, checking inflammation, and consolidating repair. The additional complication of a wound or a bleb makes no substantial difference ; given a compound fracture, only let the fragments be immediately and accurately adjusted, the wound closed with all necessary provision for perfect drainage, the limb immobilised, compressed, and swung, and, in the vast majority of cases, the fundamental indication will have been carried out, reducing the compound to a simple fracture, and treating both on identical principles.

If a simple fracture, say of the clavicle because it admits of easy observation, be not at once immobilised, material is thrown out between and around the broken ends of the bone, the deposit thickens, the part becomes hot and painful. Such a condition is best seen in those, happily, rare cases in which a fracture of the clavicle goes for some days undiagnosed. Immobilise the limb and the callus vanishes, all the more rapidly if compressed under an elastic pad. Given a flesh wound in most parts of the body ; if the edges be at once accurately brought together, and kept so, provision made for deep and surface drainage, and immobility maintained, direct union takes place, all the more surely if the part be kept in a position to favour venous return and prevent arterial afflux. Here, again, perfectly smooth elastic compression is of the greatest service, not merely in maintaining contact of the deeper, as well as of the superficial, lesion, but in restoring the balance between elastic resistance and blood pressure, which is the normal condition of living parts. Let a flesh wound, like the one we have just been considering, not be accurately adjusted ; let it be treated with water dressing or a poultice, with the limb dependent and not immobilised ; the edges become tumid, the wounded surface discharges and stinks, the surrounding skin is red, tumid, and painful. In this state, raise the limb to empty it of its blood, approximate the edges, resort to elastic compression and immo-

bilisation, swelling and pain vanish as if by magic, and healing proceeds, just as in the case of the fracture with swelling which we were considering a few minutes ago. A fracture with a wound complicating it, the condition generally known as compound fracture, will be found amenable to treatment, on the principles enunciated, with the happiest results.

My remarks have hitherto been directed to injuries of the limbs. Their truth and practical value are equally well, if not better, illustrated in injuries of the head, with some modifications rendered necessary by the condition of parts. In a fracture of the vault of the cranium without wound, the great indications of rest and prevention of extravasation are fulfilled by keeping the patient in comparative darkness, in the horizontal position, with an ice-cap. No wounds do better than scalp wounds under dry dressings, elastic compression, and a minimum of subsequent interference. An adaptation of the same principles, according to the exigencies of particular cases, will ensure success in the treatment of a large proportion of compound fractures of the skull. The question of trephining is one of special and exceptional interest, to which it would be here impossible to do justice. But as I have no wish to shun difficulties, and to restrict the scope of discussion, I may briefly state that there are very few cases in which I consider trephining justifiable in fractures of the skull. I have practised it, and seen others do it, with happy result; and I can conceive of cases in which I should not only trephine, but be prepared to incise the membranes and the substance of the brain, to fulfil local indications of effusion and compression. But if we go back to the early days of this controversy, and trace it down to our own time, I am clearly of opinion that more people have owed their death, than their life, to the trephine.

To ensure absolute rest in wounds and fractures, immobility should be secured to the utmost practicable extent, while the reparative process is going on; but no longer. Every surgeon knows how much mischief results from rest too long persisted in. The experience only affords another illustration of almost every truth, psychical and physical; carried to extremes it becomes a vice. With this reservation, the practical application of which must depend upon the exigencies of particular cases, immobility is one of the most powerful factors in surgical therapeutics. A corollary of that proposition is infrequent dressing. On this point the agree-

ment of surgeons at home and abroad has grown very manifestly during the last few years. Whatever the nature of the injury, it is scarcely possible to be too accurate and complete in first dressings. Then, watch the thermometer and the pulse, the patient's expression and the state of the skin; and so long as those cardinal indications point to safety, dress as infrequently as possible. To this end absorbent dressings contribute materially, and if they be not sufficient to ensure perfect drainage, one or more tubes may be employed for the purpose. By keeping them long, and carrying them out through the pads, it is easy to collect the discharge in a pad lightly placed over the end of the tube, so as to combine frequent removal of discharges with immobility of the apparatus.

Experience proves that the more absolute the immobility, the more evenly the limb is compressed, the closer attention is paid to position, proportionately less are irritation, vascular turgescence, and consequent effusion. The healing part shrinks as it consolidates, and dries in direct proportion as its nervous and vascular life is controlled. "That under dry and infrequent dressings, absolute rest, physiological position, and elastic pressure, most wounds and fractures heal," is a proposition which I have striven to defend since I formulated it years ago. The argument so far has been in the same direction, and that because experience only confirms its soundness.

Generalisations are proverbially difficult in a science and practice like that of surgery. However sound be their foundation, however close the reasonings by which they are arrived at, their success in particular cases depends on the judgment, skill, and care with which they are applied. To the reservations already made I must add something on "dry dressing," which, unqualified, is a very misleading designation of this plan of treatment. It is certainly entitled to be called "dry dressing," inasmuch as water is not used, and even astringent or anti-putrescent lotions very sparingly so; but success demands attention to all the essentials of the physiological treatment of surgical injuries—immobility, position, and pressure, drainage and infrequent dressing, pure and non-putrescent materials; gentle, patient, and skilled manipulation; intelligent and unceasing watchfulness of constitutional states.

Fresh wounds without loss of substance are particularly suited for the plan of treatment here recommended. They should be put up without water, the edges accurately in contact; always bearing in mind the necessity of providing for drainage outwards of any

effused fluid. Under absorbent pads and elastic pressure, with absolute rest and attention to position, the vast majority of fresh wounds heal rapidly, solidly, and painlessly. When the dressing is changed, which it should be only infrequently, no water should be employed; but if there be any discharge and necessity for cleaning, this can best be done with a pledge of dry lint or of absorbent gauze and cotton; all manipulations to be of the lightest. Such dry dressing stimulates the natural scabbing process, but is really more perfect. Wounds of many inches in length heal so directly and perfectly under dry dressing and elastic pressure, that in the course of a few days it is often difficult to detect the fine linear scar on the dry and shrivelled skin. If a fresh wound be attended with loss of substance, some boroglycerine should be poured on the part before application; it prevents too close adhesiveness, and possible bleeding, when the dressing is removed, and has the further advantage of preventing decomposition.

The necessary employment of sutures and adhesive plasters, according to requirements, need not be dwelt upon, and I shall only briefly remark that instead of, or in addition to, such bonds of union, I frequently employ styptic colloid, compound tincture of benzoin, or collodion.

In wounds with large loss of substance, if healing be slow, action may profitably be stimulated by a variety of the well-known astringent applications in ointment or lotion, than which I do not know a better than the old red lotion,\* with a liberal addition of glycerine. Position, rest, and pressure remain cardinal indications, poultices and water prohibited. By this I mean stagnant water in the shape of water dressing, which is nearly as potent as a poultice in promoting suppuration and decomposition. It is otherwise with cold-water irrigation, which is consistent with, nay may be made conducive to, perfect drainage, and by its astringent and sedative action produces effects very similar to those of rest and pressure. Cold irrigation is not easy to apply continuously comfortably, and one of its great advantages, the low temperature, may be secured by ice bags.

I hope I have made it clear that while the absence of water is a prominent feature of the dry dressing method, an essential is the maintenance of immovable apposition under elastic pressure, whereby the dynamics of the circulation are so controlled that the

\* A solution of one to two grains of sulphate of zinc in water, with the addition of some compound tincture of lavender.

part is only allowed blood enough to nourish it. Irritation, the great cause of stasis and effusion, is reduced to a minimum, and the part is maintained in a state the nearest approaching to inaction and dryness. In direct proportion, the material and the possibilities of decomposition are averted.

Contused and inflamed wounds likewise afford conclusive evidence of the soundness and general applicability of the principles and method just related. The dressing which I hold in my hand was removed from one of the *employés* in an iron warehouse. He was moving some pigs of iron, when one, weighing a little over a hundredweight, fell on his right foot. I saw the case very shortly afterwards, and found the foot very much swollen, its bony outline obliterated, the skin bluish and shining, with a star-shaped wound on the centre of the instep. Having satisfied myself that no foreign body was present, I dried the wound and placed over the dorsum of the foot this fold of lint, well soaked with compound tincture of benzoin, over it this large pad of absorbent gauze and cotton, and then a compressive bandage from the roots of the toes to the middle of the leg. I enjoined my patient to keep perfectly quiet, lying during the day with his head at the foot of a sofa and the injured foot over its head. I did not remove the dressing until the eighth day, when the wound was healed, the outline of the limb perfect, and the skin, though mottled, as from a bruise, up to the middle of the leg, cool and painless.

You see how the blood had penetrated, though in small quantity, through the dressings, and dried on the outside. The tincture of benzoin had acted as a coagulant and antiputrescent, and, drying into the lint, served the purposes of a mould. Its styptic property was assisted by pressure and position, under which the effusion was absorbed; the part shrank, and the wound healed without any further interference. This result, a typical one of the method, was not a simple consequence of a dry application, but due to a variety of causes which combined in controlling the circulation and promoting reparative action, in accordance with demonstrably true principles of animal physics.

A punctured and inflamed wound of a much more serious kind, but with equally happy issue, calls for a few words. I was asked to see a licensed victualler who, a week previously, while carving a joint, had thrust the point of a long knife into the centre of the palm of the left hand. He proceeded at once to a neighbouring

hospital, where the hæmorrhage was arrested and a carbolic dressing applied. Hæmorrhage recurred the third day, and the padded wooden splint, which I have here, was firmly applied with a calico roller to the hand, and the patient sent home with the request to attend in a few days. The arm swelled, pain was intense, and my attendance was requested. The splint you notice is barely long enough to reach from the tips of the fingers to the wrist—a useless contrivance for purposes of rest, a fulcrum for intolerable pressure under the strong calico roller firmly applied to check the bleeding. I found the palm of the swollen hand full of filth, which I lightly cleaned out with dry lint; blood issued rather freely from the wound, into which I lightly brushed iodised colloid with a camel-hair pencil. I put the man to bed, and raising the limb in the vertical position padded it and bandaged it, interlacing the spiral turns every now and then with a piece of moistened millboard. I left the man in bed, with the hand well raised, in perfect comfort. He had had no sleep for nights, but was never disturbed afterwards; in a fortnight, with four changes of pads, swelling rapidly subsided, and healing was perfect without an untoward symptom. Pressure over a short strong splint like this is just the oppressive constriction which cannot be borne, and is a source of incalculable mischief. On the other hand, the equable elastic pressure subsequently employed, with absolute rest and position on sound principles of vital dynamics, conduced to a surgical result in which the dry dressing was merely one factor.

Only the other day I was asked to see this case in consultation. A gentleman had bruised the front of his leg against the step of his carriage. The part injured was not the shin, as is usual, but the muscles outside it. Cooling lotions had been applied for two or three days; but, swelling and heat increasing, poultices were substituted, and an incision for the evacuation of matter was contemplated when I was called in. I found the part much swollen, red, and tender, and have no doubt that an opening would have given exit to pus. But the patient being very averse to the knife, I consented to endeavour to avert it, while stating clearly that the surgeon was justified in recommending it. With his assistance I raised the limb vertically, padded it and bandaged it over interlacing strips of wet dextrined millboard from the toes to the knee. The patient was ordered to remain in bed with his leg in a swing. In a few hours the bandages and millboard lattice-work were

comparatively loose. Every twelve hours an outside bandage was applied with equable pressure, and at the end of forty-eight hours the limb was exposed; we found it pale, cool, shrunken and painless.

If this may seem to point to a too mechanical doctrine of inflammatory development and treatment, I beg you to recall your experience of the everyday surgery of the upper and lower limbs. How rare are congestions and ulcerations of the former, how common of the latter. Here is a big, boggy, red leg, with a saphena vein nearly as big as an index finger, and an irregular, dirty red, filthy sore, nearly as large as the palm of the hand, the surface of the limb tense and shining, and often so tender as scarcely to bear being touched with a feather. Put the man on his back, raise the leg vertically by the heel, in one minute by accurate test I have found the circumference at mid-calf diminish exactly one inch. While an assistant supports the heel, strap the leg from the ankle to the knee with perfectly equable pressure, leaving two or three narrow interspaces for drainage opposite the ulcer. Over the plasters covering it, and surrounding the leg, place a good large pad of absorbent gauze and cotton; then bandage spirally and evenly from the toes to the knee with a good compress over the vein. If the patient can rest a day or two with his leg in a swing all the better; but even if he walks about at once, the compressive apparatus soon becomes loose. When it is opened in two or three days the pad is full of discharge, the limb much shrunken and paler; cleanse it with dry lint or absorbent cotton, reapply the same apparatus, change it every fourth or fifth day, and healing progresses in comfort and without a check. Should the sore seem languid at any one of the dressings, it may beneficially be lightly touched with sulphate of copper, or have a zinc and glycerine lotion brushed over it with a camel-hair pencil. In the main, the state of such a leg is owing originally to disturbed nutrition from interference with the circulation by mechanical causes. So, too, its healing is brought about by restoring that balance of physical conditions, which is essential to the equilibrium of blood-supply, innervation, and healthy nutrition.

On the same principles, and practically by the same method, most cases of so-called erysipelas after injury may be successfully treated. Under wet applications they spread; whereas they rapidly subside under the elastic pressure of dry absorbent gauze and cotton

pads and perfect bandaging. Even when the subjacent tissues have become sloughy, and matter has formed, subsidence on the plan indicated is most rapid, all the more so if due attention be paid to position, and digital compression be applied to the main artery. These principles of treatment follow physiological lines. Injuries are serious in direct proportion as they interfere with the exercise of healthy living functions ; to preserve and restore them must be the surgeon's great aim in treatment ; and he will be successful in direct proportion as he imitates and assists the natural processes.

To those who have noticed the omission of reference to so-called antiseptic surgery, I beg permission to address a few remarks. Life is the great antiseptic. Preserve it, restore healthy function, control by rest, position, and pressure, nervous, vascular, and muscular action, so as to minimise the material for, and the causes of, discharge, carry it off as it is produced by drainage-tubes and absorbent dressings, and the repair of injuries proceeds like healthy nutrition, uninterruptedly and painlessly. That infection is always floating in the atmosphere, ready to settle in the shape of impalpable and implacable germs into any breach which may be made in the surface of a living body, is an idea which has never troubled me.

When, in 1867, Sir James Simpson was working out his acupresure, he applied to me for some information, suggested to him on reading my papers on "The Present State of Surgery in Paris," just previously published in the 'Lancet.' To illustrate one point, I requested my then house-surgeon to tabulate all the operations of any moment which I had performed during his tenure of office, a period of about two years and nine months, during which I had discarded poultices, water dressings as little better, and dressed wounds mainly by rest, position, and pressure with pads of dry lint. Excluding a large number of minor operations, all of which were successful, the total reached 107 operations, amongst which were three of lithotomy, ovariotomy two, fistula in ano twelve, trephining skull one, removal of bony sequestrum six, ligation and division of varicose veins two, removal of female breast twelve, removal of tumour sixteen, excision of elbow four, amputation of arm, wrist, thigh, leg, or ankle twelve, partial amputation of hand or foot twenty-five ; with the result of three deaths in the 107 operations, an average of my general surgical experience. The prescription to rub strong carbolic acid into the innermost recesses of a compound

fracture, to pursue and kill the germs ; the warning that an anti-septic dressing may lose all its potency through a hole no bigger than a pin's point in the investing mackintosh, admitting countless germs ; that a dressing must be changed so soon as a little discharge permeates it, lest a septic channel be established for the ubiquitous and maleficent vibrios ; that these will settle down as a swarm from the air on a granulating sore if the spray be not kept in action while it is dressed,—are a few of the fallacies which have never had any dread for me. That as accessories to wound treatment antiseptics possess real value is an old truth, for insisting on which the world will ever be indebted to those from whom I have felt compelled to express qualified, but material, dissent. Their error has consisted in exaggerating incidents and underrating essentials ; in predicatorily from experiments on dead organic matter the action of living tissues ; in pretending to found a new surgery ; in under-estimating truths which may not have the allurement of novelty or of speculative generalisation, but which are none the less the demonstrably sound foundations of surgery as a science, one and indivisible.

If, dealing with facts and principles, I have not mentioned authors by name, it has been for two reasons. I have been anxious to steer clear of personal controversy, which is one of the most formidable obstacles in the way of calm discussion ; and it would have been impossible to refer to some authorities without seeming, but unintended, disregard of others.

Far from underrating the importance of the literature and history of the subject, I feel very deeply that if it had been better known, there would be less necessity for combating errors long since exposed, and insisting on truths inadequately appreciated or undeservedly forgotten.

Addressing myself, as by your permission I have had the privilege of doing this evening, to the Medical Society of London, I have felt that this was no occasion for a display of surgical erudition ; I have rather fixed upon it as a good opportunity to elicit, by plain statement, an expression of opinion to test the possibility of agreement, after elimination of unsubstantial differences, on the essential unity of surgical principles in the treatment of wounds and fractures.

The PRESIDENT asked if Mr. Gamgee made any difference in treatment between hospital and private cases.

Mr. W. ADAMS coincided entirely with the principles laid down by Mr. Gamgee. The exclusion of air and water were the leading features

of his own practice. Wounds from which air and water were excluded ran the course of subcutaneous wounds. He presumed that Mr. Gamgee excluded water as favouring decomposition. What did Mr. Gamgee use when wounds required to be washed? The principle of firm support and even compression was unduly neglected in modern practice. Richardson's colloid styptic he used extensively in his own practice, and knew nothing of the kind so valuable.

Dr. RICHARDSON suggested that it deserved to be determined by surgeons what was the precise thermometric indication for taking off the dressing from a wound. What account, in respect to rise of temperature, ought to be made for natural reaction? What degree of pyrexia should be considered as necessary to determine interference with the dressing? What period of continued high temperature should be allowed to elapse before such interference? There ought to be a fairly approximative general rule on this subject. Referring to the practice inculcated in Mr. Gamgee's paper, he said that in principle it dated long back. It was a treatment more or less in use ever since Friar's balsam was known as a remedy for wounds. It contained the true secret of Sir Kenelm Digby's expectant non-interfering method; it was the method enforced in a past century by Belloste; it was a method which, in this country, had from the last century into the present held its own. It had sometimes been supplemented by extra-neous and fanciful procedures. Sir Kenelm Digby and his adherents had supplemented it by introducing, as an adjunct, the "sympathetic powder," with which the sufferer was taught to polish the weapon which caused the wound, as if that were a part of the cure; and in our day we had seen it supplemented by procedures which in future times would read, he believed, as equally unnecessary and nonsensical. Mr. Gamgee had brought the practice back to its true physiological bearing by showing that the sustainment of life in the injured part itself was the cause of success in healing, apart from any mysterious local surroundings or imaginary destructive agencies. In cases where there was bleeding from a wound that had been inflicted some time, and from which there was offensive odour, Dr. Richardson agreed with the author that the iodised was more effective than the styptic colloid. He agreed equally in opposing the employment of water for dressing wounds, and recommended for cleansing purposes proof spirit, containing tannin and glycerine, a solution which was at once a good wash and a good styptic. Dr. Richardson concluded by urging that the profession ought to continue on the splendid historic lines that had been laid down for it in the past, and that if, instead of pursuing this course, it allowed itself to be led away by the hypotheses of men, however distinguished, who did not belong to it, and did not understand its practical work, it would go down altogether in fact as well as in estimation.

Mr. PAGE did not think the thermometer a sufficient index of danger, by reason of the various nervous temperaments of different patients, which determined a rise in temperature in the reaction after a wound. Mr. Gamgee's paper was based on sound physiological principles; but he could not agree with Dr. Richardson's strictures on Listerism, which he thought would always be regarded as an effort to restore natural conditions to the seat of the wound.

Mr. EDMUND OWEN corroborated Mr. Page's remarks about the varying degrees to which the temperature might normally rise in different persons.

Mr. BRYANT agreed with Mr. Page that Mr. Gamgee's paper was based on physiological principles. He noticed that Mr. Gamgee seemed to advocate light pressure by bandaging, not the firm pressure he formerly recommended. He agreed as to the importance of immobility in wounds of soft parts. Mr. Gamgee had hardly emphasised the advantage of drainage as much as he might have done. To secure free drainage was a most important indication, and caution should be used in dressing wounds in such a manner that free drainage was not permissible. Though not a "spray and gauze" man in any sense, yet he had faith in the action of the drugs known as antiseptics, which obviated the tendency to decomposition induced by water. Mr. Gamgee eschewed water altogether in dressing. He recommended also his principle of letting wounds alone as much as possible. The degree of elevation of temperature was not so important an indication as persistence of elevation. Isolated rises were of little consequence. Persistence after the second or third day was of much consequence.

The PRESIDENT had for many years practised Mr. Gamgee's method, as a rule, in private practice, and occasionally in hospital practice, although this was rather difficult in a hospital imbued with the doctrines of Listerism.

Mr. GAMGEE, in reply, said he did not trouble too much about the arrest of bleeding. He shut the wound up as quickly as possible, and under this system he never had secondary haemorrhage. It was on accurately fitting universal pressure that he relied, not on localised hard pressure. He never sealed wounds without allowing free drainage. The washing of wounds should be as slight as possible; too much was injurious. He could find no difference, physiological or practical, between boroglyceride and glycerinum boracis (B.P.), with an excess of borax. He warmly advocated the study of Dr. Richardson's book on the healing of wounds, and mentioned certain facts showing the influence of mental excitement on the elevation of temperature in surgical cases. Many great operations were accomplished without any rise whatever. He treated private and hospital patients in precisely the same manner. The secret of Mr. Lister's success was the consummate skill and care with which those whom he had educated were trained to carry out their treatment.

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November 13th, 1882.

#### A CASE OF OSTEITIS DEFORMANS.

By W. J. WALSHAM, F.R.C.S.

A. B.—, a man, ~~at~~ 55, came under my care at St. Bartholomew's Hospital during last summer, complaining of a chronic ulcer of the leg. On examining the patient it was found that the corresponding tibia was greatly thickened, and, on making inquiries, it was further

discovered that other bones were also enlarged. The patient stated that he first noticed a swelling of the right tibia about five years ago—his attention being called to it by shooting pains in that part—and subsequently one of the left tibia. About two years ago the right femur began to enlarge, then the left femur, then the right radius and right clavicle. For the last twelve months he had noticed that the paper cap he wore whilst following his trade of a carpenter's plane maker had several times to be enlarged; and during the same period the bending of the spine and the rounding of the shoulders, which he had attributed to his work, had gradually increased. He formerly measured 5 feet 7 $\frac{1}{2}$  inches; the last two years his friends had remarked that his height had decreased; he now measured 5 feet 5 $\frac{1}{2}$  inches. He emphatically denied ever having had syphilis, and does not remember to have received any injury to any of the affected bones. He was always temperate, never had gout or rheumatism, and until five years ago always enjoyed excellent health. He was the father of thirteen children, eleven of whom were living. His father and mother had excellent health and died at a good old age. There was one brother, still a strong and healthy man. Of his sisters, one, he said, died of consumption, one of anxiety and trouble, one of cancer of the uterus at the age of fifty.

The right and left tibiae are much enlarged and are uneven and nodular down the shin. They appear also to be increased in length, bending forwards and slightly inwards, in consequence, it would seem, of the upper and lower ends being tied in position by the fibula, which apparently is not affected. Both femora are likewise swollen and thickened, and bent slightly forwards and outwards, and the trochanters appear nearer to the anterior superior spines of their respective ilia than is natural. The lower third of the right radius and the sternal half of the right clavicle are similarly affected.

This case presents all the characters of that disease of the bones described by Sir James Paget in the 'Medico-Chirurgical Transactions' a few sessions back, and called by him "Osteitis Deformans." There is the same gradual enlargement of the bones without ascribable cause, the slowly enlarging head as evidenced by the increased size required for his caps, the peculiar bending of the spine, the decrease in height and consequent stooping gait, the shooting pains, and the slowly progressive nature of the disease.

The PRESIDENT asked whether there was any defect of intellect.  
Mr. NOBLE SMITH inquired whether the urine contained sugar. In a

case of a lady, sixty-one years old, he had pursued a tonic treatment in view of defective nutrition.

Mr. WALSHAM, in reply, said that the man's intellect was unaffected. The urine had been examined for albumen, but none was present. Iodide of potassium had been given without effect.

### AMMONIA, CHLOROFORM, AND AMMONIATED CHLOROFORM AS ANTISEPTICS.

By B. W. RICHARDSON, M.D., LL.D., F.R.S., &c.

THE author first called attention to his original paper in 1851, on the antiseptic properties of gases. He had there shown that various gases and vapours, including arseniuretted hydrogen gas and chloroform vapour, acted as antiseptics on fresh animal structures, together with many other aeriform and vaporous agents. He next exhibited two small specimens of lung which had been shown in 1851 in illustration of the antiseptic powers of chloroform vapour. The specimens had remained in their bottles untouched for over thirty-two years, and were still well preserved. He referred also to a paper he had read in 1862 on the antiseptic properties of ammonia, in which he had indicated that the vapour of ammonia was one of the most perfect of antiseptics. In further demonstration Dr. Richardson exhibited a specimen of blood which had been drawn from a sheep's neck into an ammoniated atmosphere in April, 1862, and had been enclosed in a well-stopped bottle for more than twenty years. This blood was still perfectly fresh and fluid, and although its microscopical characters were changed it could be made to undergo coagulation on displacement of the ammonia, so that it still exhibited what John Hunter would have called "the final act of life." Proceeding to his present research the author said that since his last paper he had continued to use ammonia vapour as the antiseptic most convenient, and he had improved upon it in two ways. 1. When a structure to be preserved contained a great deal of fat it was apt, after a few weeks, to become saponified, by which its character was changed. To avoid such change he had used what he called ammoniated chloroform, which was simply chloroform and ammonia vapour combined. By this means much less ammonia was required, and the saponifying process was prevented. 2. It was sometimes important to preserve the colour of a substance; to effect this the bottle containing the

specimen was charged with common coal gas, as well as with the vapour of chloroform. The coal gas contained sufficient carbonic oxide to maintain the colour. Specimens of the heart, kidney, spleen, and the viscera of birds were shown, preserved in these various ways. The advantages were as follows : (a) In making a post-mortem the operator had simply to take with him a jar or bottle well stopped and ready charged with antiseptic vapour. Into this gas he put the specimens and closed them down. He could keep them afterwards for days, or even weeks. (b) In some forensic cases specimens might be retained in pure ammonia or chloroform vapour in a perfectly sound state during a long investigation. (c) The antiseptic results obtained indicated certain uses of ammoniated chloroform in diseases attended with rapid putrefactive change.

In reply to questions from the President and Dr. Routh, Dr. Richardson said that chloroform would only take up a certain small proportion of ammonia. The solution should be used concentrated. In the case of putrid sorethroat ammoniated chloroform diluted with alcohol could be administered by inhalation. He feared it would be impossible to use the preparation on a large scale so as to preserve bodies for dissection. He had it tried on sheep and failed, owing to the gases infiltrating the tissues. Chloride of zinc and spirit embalmed a body perfectly, but made it too hard for dissection.

#### NEPHRECTOMY BY ABDOMINAL SECTION.

By J. KNOWSLEY THORNTON, M.B., C.M.

MR. KNOWSLEY THORNTON read notes of three successful cases of nephrectomy by abdominal section. The first case was that of a child seven years old, in whom the left kidney was removed by median abdominal section for hydro-nephrosis, which was probably congenital, as the ureter was only represented by a small fibrous cord. The child made an excellent recovery, and is now strong and well-developed ; before the operation she was delicate and puny. The second case was that of a woman aged twenty-six, who dated her illness from her second and last pregnancy. The kidney was much enlarged. The patient was almost in a dying state when admitted into the Samaritan Hospital

in February, 1882. Mr. Thornton first operated through the loin, but failed to find by this exploration the cause of the trouble. She improved for a time; but soon relapsed, and he then removed the kidney by lateral abdominal section (incision of Langenb $\ddot{u}$ ch), and found that it was a sacculated scrofulous kidney. The bladder end of the ureter was tied and brought out of the wound at its lower angle—an important precaution, as this portion of the ureter is generally diseased and putrid in its interior. The patient made an excellent recovery; and in a letter just received she stated that her health was good and the urine clear and natural. The third case was that of a woman, fifty-eight years old, who had been known to have suppuration of the kidney for sixteen years. The kidney had been aspirated several times without relief, and Mr. Thornton decided to remove it by Langenb $\ddot{u}$ ch's incision. The operation was exceedingly difficult owing to the great obesity of the patient and the extensive adhesions. The sac into which the kidney had been converted weighed after removal four pounds and a half, and contained twenty pints of pus. The patient made a rapid and perfect recovery without fever, the only complication being some bronchitis, which was present before the operation, and became more acute for two or three days afterwards. Mr. B. Morison, of Canonbury, reports her present condition as satisfactory. The cause of the mischief was found to be a very small umbella-shaped calculus, the "handle" of which was fixed in the opening of the ureter. All the operations were performed on strict Listerian principles, and to this Mr. Thornton attributed in great part the even and rapid recovery of the patients. He pointed out the great advantages of abdominal incision over the median or lumbar section, and expressed his belief that it would be the operation of the future in nephrectomy. He drew special attention to his method of treating the ureter in these cases, as he thought it of great importance. He considered that these cases emphasised the fact already demonstrated by his ovariotomy practice, that under antiseptic conditions the peritoneum can dispose of considerable quantities of effused material without the aid of the drainage-tube, and without constitutional disturbance, even after the removal of so important an organ as the kidney. The kidney could be more safely and thoroughly explored by Langenb $\ddot{u}$ ch's incision under antiseptic management than by the lumbar incision.

Dr. RICHARDSON remarked that the use of iodine, which was an

oxidising agent, destructive of putrefactive products, and not a germicide, could hardly be considered as an instance of Listerism.

Mr. H. MORRIS thought the cases did not bear on the comparison between the merits of nephrectomy and nephrotomy. All these cases were clearly cases for nephrectomy; but in others nephrotomy was the proper course to pursue. In the third case an early exploratory incision might have obviated the necessity for nephrectomy. In the second case, were the small black concretions really calculi or concretions of pus and blood? He had lately made an exploratory incision in the case of a man who had since passed a small calculus. A second exploratory incision failed to reveal a stone; but he believed that one was present; and possibly nephrectomy might be required at a later date. No especial antiseptic treatment was employed in that case, but cotton-wool dressings were used. The wound closed with remarkable rapidity, as it did in a previous similar case of his. He alluded to cases where relief had followed nephrotomy, though no stone had been found, and thought that in these cases the affection was an unduly mobile kidney, which became fixed by adhesions resulting from the operation.

Mr. THORNTON, in reply to the President, said he considered silk ligatures more convenient than, and as easily made antiseptic as, catgut. He did not deny that good results might be obtained without antiseptics, but still he held that better results followed their use. Thus he was able to close his wounds without resorting to drainage. He used iodine when he wished to destroy the products of putrefaction; carbolic acid to prevent putrefaction. He did not intend to deny the utility of nephrotomy, but merely to point out that it was not applicable to these three cases. So far as examination had yet gone, the calculi contained crystals of oxalate of lime; their outer coating was probably blood.

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November 20th, 1882.

#### A CASE OF SUPPOSED INTRATHORACIC ANEURISM.

By EDWIN HAWARD, M.D.

DR. EDWIN HAWARD showed a patient suffering apparently from aneurism of the arch of the aorta, and read notes of the history of the case, &c. These affections being generally surrounded with more or less difficulty as to their true diagnosis, and embracing as they do many points of interest to the medical profession, it was thought desirable to submit the case to the notice of the Fellows of the Medical Society. The principal features of the case observed on applying the stethoscope to the chest, were as follows: an unusual rough blowing murmur was heard at the *second* left intercostal space, half an inch outside the sternum, not very

audible under ordinary circumstances, blending with and accompanying the systolic sound and much fainter with the second sound. At this spot there was no bulging or thrill. There was scarcely any impulse there. Each expiration was broken by a series of audible puffs, like the distant snorting of a goods engine. They corresponded to the cardiac contractions, and were slightly anterior to the radial pulse beats. They were increased in loudness by exertion, and were felt, as well as heard, by the patient himself. After prolonged rest in bed, they disappeared altogether, but returned directly the patient rose. These abnormal sounds were distinctly perceived by different Fellows of the Society, and a majority seemed to come to the conclusion that they were due to some aneurismal tumour situated about the arch of the aorta. Others seemed to doubt if they were due to aneurism at all.

Under these circumstances it was suggested that a committee should be appointed to examine, from time to time, the state of the patient, and report the result of their examination to the Society, the patient having been placed under the care of Dr. Cavafy, at St. George's Hospital, where every facility was given for carrying out this object.

With respect to treatment very slight allusion was made. In the absence of any very prominent local symptoms attention was directed chiefly to the weakened condition of the patient, induced by a previous attack of pleurisy ; for this iron combined with digitalis, cod-liver oil, &c., and a generous diet, were prescribed, and as much repose as possible was enjoined. His present condition was certainly improved ; and he had derived great benefit from his short residence in the hospital.

In reply to questions by Drs. Habershon, Hall, and Cavafy, Dr. Haward said that the thyroid enlargement had not increased ; he was not aware whether the sound was modified by sleep or repose, and thought the disease to be in an early stage. No laryngoscopic examination had been made.

## PRACTICAL NOTES ON TAPPING THE CHEST.

By FREDERICK T. HICKS, M.A., M.B. Oxon.

DR. FREDERICK HICKS drew attention to an improved form of apparatus for paracentesis thoracis. The advantages claimed for the arrangement were: (1) that it enabled any degree of pressure, high or low, to be used, or maintained during the operation at the will of the operator; (2) that a manometer for measuring the intrathoracic pressure either at the commencement or during the operation could be employed very easily, and without encumbering the apparatus. Two forms of manometer were exhibited and their action explained and demonstrated, the fluid being mercury in one, and in the other coloured water. In the latter case the disarrangement of the apparatus by the oscillations of pressure during coughing was obviated by a mercurial valve, which was so constructed as to allow a slow current of air at any pressure to pass freely, and affect the water gauge only; whilst any sudden rush of air acted on the mercurial column, and in doing so, closed the tube which connected the trocar with the manometer. The construction of this apparatus was explained by a diagram and model.

The use of the manometer was recommended in all cases of paracentesis thoracis. The intrathoracic pressure was not proportionate to the amount of fluid present. In many cases the fluid was under slight or even no pressure, and in some cases there was actually suction, which might amount to half an inch of mercury. Without a knowledge of this condition it was impossible to estimate the force required to withdraw the fluid; and if this were too low the withdrawal was rendered less complete, and the liability to the sucking in of air on the patient coughing or taking a deep inspiration increased; while, if it were too high, blood was easily expressed; and especially so in tapping recent effusions.

The same paracentesis apparatus was also shown to be adapted for washing out fluid-containing cavities, by alternately injecting from one bottle and withdrawing into another. This was done through the same trocar by means of a three-way stopcock, and the opening or closing of the apparatus was unnecessary during the operation.

If required, by the same apparatus, carbolised air could be intro-

duced into the pleura, as in the method recommended by Mr. R. W. Parker, the pressure being at the same time indicated by a manometer. In this operation the pneumatics of the lung resembled the condition produced by free incision into the pleura. The method was scarcely demanded except in those cases where the lung was much weakened by phthisical cavities, and its rupture was to be feared on withdrawing the pleuritic fluid.

Attention was also drawn to the use of the elastic bandage during, and at the termination of, paracentesis thoracis, as an effectual means of preventing the dragging pain and cough which usually occurs.

In all the apparatus shown, one special point had been kept in mind, viz. the necessity of obviating the accidental introduction of air into the pleura during the various arrangements and manipulations, and this without complicating the apparatus.

The trocars employed, which were found to be the most convenient for all purposes, were Messrs. Matthews Bros.' guarded needles, with piston-acting stylets. They are a modification of the trocars recommended in Dr. Powell's work on Disease of the Pleura, &c., but have this advantage, that the stylet is blunt and the danger of wounding the lung thus obviated.

An instrument was then shown for exploring, and if necessary introducing a drainage tube into, cavities in the lungs resulting from phthisis or bronchiectasis. In the latter case especially there was often considerable difficulty in localising the cavity. The physical signs being best conducted by condensed lung tissue, which might not be opposite the cavity, an exploration was always needed as a preliminary measure. The exploring trocar having been successfully introduced, and the fact of its being in the cavity being made evident by the escape of pus from the cannula on the withdrawal of the trocar, the instrument shown acted as a director, by means of which a dilating gorget could be introduced. An opening was thus made through which a drainage tube could be passed, and the trocar did not need to be withdrawn until the drainage tube was in the cavity.

The same instrument was also adapted for conveniently introducing a drainage tube into the pleura in cases of empyema where an anaesthetic was not administered, but only the skin frozen, and where rapidity in operation became a matter of importance.

Various forms of drainage tubes for the pleura, of silver, vulcanite, and india rubber, were then exhibited. The form most recom-

mended was made of a piece of red india-rubber tubing attached to a silver cannula about half an inch long, and connected by a simple loop fastening with an oval ring of silver wire. Such an arrangement gave mobility in all directions, prevented the tube from slipping in or out, had no flange to obscure the wound and retain discharge, could be made of any length or size, and adapted to any form of sinus.

All the instruments shown were those which were in regular use at the Brompton Hospital for Consumption, and their advantages had been well proved.

Great stress was laid upon the importance of absolute cleanliness in all instruments used for operations on the pleura, and the apparatus shown was so arranged that this point could be secured with facility.

#### **REMARKS ON THE TREATMENT OF INTRA-PLEURAL EFFUSIONS.**

By J. THOROWGOOD, M.D.

THE operation of tapping the chest for the evacuation of collections of fluid, though old as the days of Hippocrates, had only of late years taken its position as a recognised and successful way of dealing with intra-pleural effusions. Before the days of Laennec, difficulty in the diagnosis of fluid within the chest caused the postponement of any operative measure for relief till the chest became bulged, with perhaps an abscess distinctly pointing. Then it was thought justifiable to puncture. The fluid was let out, and commonly the already enfeebled patient sank before very long from exhaustion.

In Dr. Thorowgood's experience rapid evacuation of fluid from the cavity of the chest by the aspirator was almost invariably followed by speedy re-accumulation; hence his practice was generally to wait three weeks in a case of obvious intra-thoracic effusion before aspirating. Brief details of cases were given where pretty copious effusions had become absorbed in a satisfactory way under the influence of small doses of mercury with the use of diuretic mixtures. Stress was laid on very gradual evacuation of the fluid under a low suction power, when aspiration became necessary. In cases of empyema, as a general rule, the open method of continuous drainage succeeded best, but the details of one case were given where an empyema was treated by two aspirations with a perfectly

successful result. On the first occasion pure pus was drawn out; at the second operation twelve months later a blood-stained fluid appeared, after which steady and complete recovery followed.

Though in this case there was a very long interval between the two tappings, this should not be the rule. If pus appeared once in the aspirator, and a week or two later the chest seemed to have re-filled, no time should be lost in again emptying it, so that the lung might have a chance to expand. The report of a case seen with Mr. Bullock, of Isleworth, proved the expediency of this course. A youth had an empyema of the right side, which was evacuated by aspiration. In eight days' time the pus seemed to have again collected; it was again drawn out, and this time Mr. Bullock incised the intercostal space and inserted a drainage tube. The operation was done under a carbolic spray and the patient packed up in carbolic gauze. In two months' time his recovery was complete; the lung filled out well, and there was no deformity of the chest.

With regard to washing out the chest, Dr. Thorowgood was of opinion that this proceeding was only required where the discharge was offensive. The great point was to obtain free drainage, so that the pus should not collect in the thoracic cavity.

Attention was drawn in the paper to right hydrothorax as sometimes caused by cirrhosis of the liver, and the details of a well-marked case in illustration of this point were given.

Dr. GREEN pointed out the different objects with which paracentesis was performed in a case of serous, and in one of purulent, effusion. In the former it was only needful to remove the intra-thoracic pressure, and for this he preferred Dr. Hicks' method. The cases marked by the greatest amount of effusion were those that were most insidious in onset and attended by least pyrexia. In such cases he did not anticipate much benefit from drugs, but advocated early operation.

Dr. C. T. WILLIAMS thought that in very early stages drugs were of service. So far as his own experience went, the cases treated by aspiration did better than the others. The occurrence of pain in the side was an indication to cease withdrawing fluid, the remainder being always absorbed. He mentioned a case in which paracentesis was refused, and where treatment by drugs took a year to accomplish the cure. He had not seen much success from division of ribs or cartilage.

Dr. HALL remarked on the importance in empyema of a counter-opening in the lowest part of the chest, in order efficiently to drain the cavity.

Dr. SYMES THOMPSON thought that in sero-purulent cases it was important to empty the pleural sac completely. In such cases Dr. Hicks' apparatus for avoiding the introduction of air was useful.

Dr. HICKS said he strongly advocated the use of the least possible

amount of suction in treating pleural effusions, the aspirator being used only as a safeguard in case the tube became blocked. The disadvantage of making an opening very low down was that it might get blocked by the diaphragm.

Dr. THOROWGOOD thought that in serous effusion the use or non-use of the aspirator was of minor importance.

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*November 27th, 1882.*

### THE TREATMENT OF SYPHILIS.

By C. R. DRYSDALE, M.D.

THE author first pointed to the growing belief that some germ existed in the fluids of syphilitic persons, which gave rise to the various symptoms and made the disease contagious. Gonorrhœa was of like nature, and in passing he mentioned that Dr. Eklund, of Stockholm, had sent him a preparation showing a fungus which that gentleman had named *Ediophyton dictyades*, and which he asserted was always to be found in cases of virulent urethritis in the male. The preparation was exhibited under a microscope. The treatment of syphilis was even yet not determinate, notwithstanding the many discussions that had taken place upon this question during the last twenty years in London, Paris, New York, and Philadelphia. Thus in Paris, the chief authority, Dr. A. Fournier, advised the use of interrupted courses of mercury for two years, ten months of which time was to be devoted to daily doses of about a grain and a half of the proto-iodide of mercury. Dr. Keyes, of New York, recommended that a daily dose of about half a grain of the same salt of mercury should be given continuously for perhaps three or four years, whilst in London there was scarcely any regular treatment of the disease by long courses of mercury, and in Edinburgh some practitioners gave no mercury at all. Syphilis was clearly a new disease, introduced into Europe in 1492, and first treated by inunction in 1497. Paracelsus first gave mercury internally in 1570, and until 1812 in this country there could be little doubt that mercury had poisoned fatally perhaps as many patients as had been killed by syphilis, while until 1836, when Wallace, of Dublin, published in the 'Lancet' his account of the treatment of

tertiary syphilis by iodide of potassium, it must have been indeed a terrible disease. Since 1812, when Dr. Fergusson studied the natural history of the disease at Evora in Portugal, many accurate observers had been occupied in ascertaining what the disease really was when treated with and without mercury. It was now ascertained that like smallpox, scarlet fever, and other virulent diseases, syphilis was sometimes a very severe disease and sometimes a very mild one. Sigmund, of Vienna, for instance, had lately said that in 40 per cent. of untreated cases the patients hardly notice their disease, as the eruptions were so slight; whilst 10 per cent. of those with obvious symptoms got well without any but local measures. He, Dr. Drysdale, had for some years treated syphilis without mercury, only employing iodide of potassium in case tertiary symptoms arose. Fournier and Hutchinson, however, had made such a point of the power of mercury to prevent the occurrence of tertiary symptoms that he had begun to look on mercury as a possible germicide, and had, therefore, for some ten years given small doses of mercury continuously to all patients with well marked hard sore or with secondary eruptions, and continued these small doses for months and even for a year and a half on some occasions. One-sixth of a grain of the proto-iodide (green iodide) of mercury was the dose he gave, twice daily, or one grain of mercury-with-chalk, and since he had used this treatment he had not had any salivation or other mischief traceable to mercury to record, whilst at the same time, as far as he knew, his patients had had almost a complete immunity from tertiary syphilis. When iritis supervened or severe rheumatic pains with headache, he sometimes had used inunction for some days, or given as much as one grain of the proto-iodide of mercury, in doses of one sixth of a grain every two hours, until the severity of the symptoms was subdued; returning then to the tonic dose of one sixth of a grain twice daily in his hospital cases at the Rescue Society of London's Hospital. He was persuaded that, sooner or later, the germs of syphilis would be discovered by the microscope. Lostorpher, some years ago, had thought he had seen it, and more recently Dr. Klebs in 1878 ('Alt. Wien. Med. Zeit.,' Oct. 15th, 1878) alleged that he had cultivated a spore found in the blood of a syphilitic patient, inoculated an ape with it, and produced ulcerations and gummy products in the animal by so doing. There seemed no reason why the so-called cases of "mild" syphilis should be untreated, as Dr. Diday had recommended, if syphilis

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were to be treated at all by the specific, mercury, for it was precisely in such cases, according to Broadbent, Berkeley Hill, and Fournier, that cerebral syphilis was most likely to appear. Nor, again, was it right, as recommended by Professor Keyes, of New York, to wait until secondary symptoms appeared; since the hard sore and enlarged inguinal glands were quite sufficient evidence of the existence of the disease, and it was at its outset that the germs in all probability would be most easily attacked by treatment. Soft sore had nothing to do with syphilis, and was quite a local virus like scabies or ringworm, and should never have mercury wasted on it. Gonorrhœa was in very rare cases caused by mucous tubercles, and might, when very obstinate, according to H. Lee, be benefited by a few doses of mercury. Gummy deposits in the palate or bones or soft parts should be treated above all by large and heroic doses of the iodide of potassium, as mercury had very little power over them. When the lesion had been cured, mercury in tonic doses might be resumed as an antagonist of the virus, which seemed to him, Dr Drysdale, to exist more or less in all syphilitic patients for many years, since second attacks of the disease were as rare as second attacks of smallpox or scarlet fever. In conclusion, he had found very small doses of mercury inoffensive, and probably possessed of germicidal properties in syphilis, and he was therefore at present in the habit of prescribing such in prolonged course to all patients with primary or secondary syphilis.

## THE DIFFICULTY OF DIAGNOSING TRUE SYPHILIS IN WOMEN, AND THE NATURE OF ITS CONTAGION.

By CHAS. HENRY FELIX ROUTH, M.D.

PREMISING that his object was not to attack the Army Contagious Diseases Act, but to point out the legitimate bearing of the medical science of true syphilis on individuals and a nation, Dr. Routh first passed in review a few of the erroneous views of the disease entertained even during his own medical life. The author next spoke of the two views held, stating the principal authorities in each case, viz. as to the unity and the duality theories. While admitting himself to be a dualist he showed this discordance of opinion to be susceptible of explanation through the existence of mixed sores, which if

possible in cases of men, were also more possible in women, the uterine canal, in which there was normally suction upwards, being as capable of infection by true syphilis as the male urethra. Quoting the experiments made by Lane and others, who had produced soft sores from inoculation of hard sores, he showed that these sores varied in character from the true soft sores, as proved by Mr. Lee. Mr. Lane's conclusions were also fallacious, because he inoculated persons already affected with syphilis. The sores were necessarily modified according to Ricord, who had stated that his own similar experiments were fallacious, such inoculations necessarily requiring to be made on healthy persons. This other French practitioners had indubitably proved. The author then expressed his regret that in the 'English Army Reports' the unphilosophical method of confusedly mixing soft and hard sores was adhered to. In former years they were carefully distinguished. Under the present system many important truths about syphilis were lost to science. The author then proceeded to describe the true syphilitic sore in women, quoting from the 'Lessons on Syphilis' by Lecour, showing that it was very small, most superficial, most insignificant, so to say less than nothing, always deceiving in its early period. Later, having a little wider base, but even at its sumnum of development a limited, simply erosive, sore, with no tendency to extend or deepen, so that it was rarely made out *de visu*, &c. This opinion was confirmed by quotations from Dr. Drysdale and Mr. Henry Lee. A guess which he had been forced to make by the Contagious Diseases Acts Committee that half the sores from true syphilis were not detectable in a woman, was confirmed by a quotation from Mr. Lee, who referred half the cases of true syphilis to secretions of diseased women in whom no primary lesion could be detected. The author then proceeded to show that even the French examiners had condemned all methods of examination hitherto carried on with women as ineffectual, and had recommended others which were not practicable.

Passing on to the subject of the *contagion of true syphilis* he showed how intense it was; when Ricord had proved that a single drop of syphilitic pus dissolved in a glass of water would provide a solution, a single drop of which would inoculate syphilis. He then showed that it was proved:—1st. A woman could contaminate by *her secretions alone*, quoting several French and English authorities, and the fact that Fournier extended this contagious power to three

or four years. 2nd. A woman could infect a man by "*mediate contagion*," the nature of which he explained, and in instances (where women copulated as many as twenty-five times a night, as medical authorities stated), even a woman healthy at the time might contaminate many men, through one of their number being diseased.

3rd. The author next referred to *syphilized women*, by which term he meant women who, having once had syphilis and been cured of it, afterwards became incapable of reinoculation, and so, if examined, would be found free of disease and yet were fertile sources of infection to men. This was especially the case with old prostitutes as compared with young women. The latter if diseased were more readily found out, and from timidity and because less hardened, were mostly frightened away by the police or sometimes perhaps reclaimed, and so left in the field the more dangerous class of prostitutes, namely, the older women, to do more harm. That the Contagious Diseases Acts had this tendency both in France and in England he showed by statistical returns.

4th. The contagion of syphilis and the disease itself was *intensified in virulence* wherever brothels were tolerated. This arose partly from (a) the unhealthy hygienic conditions of these women, as opposed to those of isolated and clandestine prostitutes. The former had no choice allowed them in the selection of their male companions, however filthy they might be; hence their general ill health and greater mortality; and also (b) the greater amount of disease actually found amongst these women. This was illustrated by tables from France and Brussels, the numbers affected with true syphilis being for France in brothels 23·1 per cent., for isolated prostitutes 5·1 and clandestine prostitutes 1·4 per cent.; and for Brussels in all venereal cases, brothel prostitutes 49· per cent. against 34·3 per cent. isolated prostitutes.

5th. The danger of licensed women was also shown to be increased by the inadequacy of the examinations made, owing to the number of prostitutes examined and the few medical men who were engaged in the ordeal; also by direct contamination through the speculum, both being sources of danger admitted on all hands as effective for evil abroad, although he hoped not in England.

Dr. Routh showed, from the English data of the Contagious Diseases Acts, that true syphilis was more severe in the protected than in the unprotected districts, the number affected being constantly much greater; and that even Mr. Lawson admitted the chance of a soldier

contracting syphilis to be in the former as compared to the latter as 36 to 33 ; and that according to the last published records for two years from the 'Army Reports,' although syphilis had increased in both districts, in the former the increase from 1879 to 1880 was 57· per cent., in the latter 45· per cent.

6th. Secondary syphilis was next considered. He explained why these data of the Army were not altogether reliable for comparison, because too low for protected as compared to unprotected districts, and because the ratios were now drawn in a different manner than formerly. This led to a disagreement in the explanation of the returns by opposed parties. But even taking Mr. Lawson's tables as true they gave only a ratio equal to the gain of about half a man on 1000 for the protected districts for the last eight years. During the two years above mentioned, 1879-80, for every 1000 soldiers the numbers for the whole army of cases of secondary syphilis had increased from 29· to 30·5 per cent.

I. The author then drew the following conclusions :

1st. The primary disease in women, according to some of the first authorities, will frequently, probably in half the cases, escape observation.

2nd. That this is especially true if the examination be restricted to the sexual organs.

II. That as regards its contagion :

1st. It is communicable by the secretions up to three and perhaps four years after all primary sores have disappeared.

2nd. That it can be communicated by "mediate contagion;" and especially so by a syphilized woman.

3rd. That the disease is always more frequent and most severe in brothels, less so among isolated, and least among clandestine prostitutes ; and more communicable to men in the same order.

4th. That where in a population vice is regulated, the chances of getting true syphilis is greater than where it is not, and this is probably also true for secondary syphilis.

Lastly. That where vice is regulated (and especially where brothels are allowed), syphilis increases in quantity and intensity ; and that therefore these houses should be abolished.

Mr. ST. GEORGE MIVART drew a distinction between the French system, which had broken down from the brutality of the police, and the English. Dr. Routh's arguments were mainly drawn from the former. The most common source of infection he believed to be mucous tubercle, and not primary sore.

Mr. EDMUND OWEN had found that soft sores were apt to become indurated, and to be followed by secondary symptoms, whilst infection not uncommonly was the sequel to a sore which never bore typical induration; and he believed beyond doubt in the unity of the syphilitic virus. He protested against Dr. Routh's conclusion that the working of the Contagious Diseases Acts increased vice and propagated disease. The evidence given before the Select Committee had led its members to form the opposite conclusion.

Dr. DRESDALE and Dr. ROUTH briefly replied.

*December 4th, 1882.*

## BACTERIA AND MICROCOCCI. BACILLI IN TUBERCULOSIS.

By HENEAGE GIBBES, M.D.

Dr. HENEAGE GIBBES showed a number of microscopic specimens containing bacteria and micrococci, viz.:

The lung of a guinea-pig inoculated with anthrax; bacilli in the blood-vessels.

The liver of a guinea-pig inoculated with anthrax; bacilli in the blood-vessels.

Bacillus anthracis, cultivated in gelatine by Dr. Klein.

The kidney of a man who died in the Welbeck poisoning case; bacteria in the glomeruli.

The liver of a man dead of septicæmia; minute bacilli blocking a vessel.

The liver of a pig, dead of "purples." Putrefactive bacteria.

The skin of a sheep, dead of sheep-pox; lymphatics filled with micrococci.

Diphtheritic membrane; micrococci and some bacteria.

Mesenteric gland from a case of typhoid fever; "typhoid bacillus."

Polypus uteri; bacteria from ill-kept mucilage accidentally used in preparing sections.

And a number of specimens of bacillus tuberculosis in sputum and lung.

After describing the specimens Dr. Gibbes read the following paper:

### BACILLI IN TUBERCULOSIS.

I will discuss the subject of tuberculosis; first, as it appears in animals; secondly, in man.

I have placed two specimens of bovine tuberculosis under the microscope. One of them shows the margin of a tuberculous mass with bacilli all through the section. The other shows a giant cell with a ring of nuclei in the periphery; inside these there is a more or less complete ring of bacilli, while the centre is free from either. These are sections from a lung hardened in chromic acid in the usual manner. They were cut in a freezing microtome; they were then soaked in warm distilled water to remove the gum in which they were frozen. After this they were placed in the magenta solution for half an hour, then washed in a 33 per cent. solution of nitric acid until they showed no bright colour in distilled water. They were then thoroughly washed in distilled water to remove all traces of the acid. This must be carefully done or they will not stain with the blue. They were then placed in a solution of methylene blue. This is made by rubbing up some of the powder in alcohol and then adding distilled water. The proportions do not matter much; the alcohol is only used in sufficient quantity to dissolve the colour, the water is then added until a deep rich blue is obtained. Some of this solution is filtered into a watch glass, and the sections allowed to remain in it until they have attained a very deep colour. This will take a quarter of an hour or longer. The sections must be deeply stained; as they will lose a great deal of colour in the water and spirit in which they are subsequently washed. The rest of the process is simple:—Wash away as much colour as is possible in distilled water, then do the same in methylated spirit; when no more colour comes away, place them for a short time in absolute alcohol, and mount in Canada balsam solution.

With regard to the microscopical pathology of bovine tuberculosis, I have not yet got together sufficient data to say anything very definite about it. As far as I have gone in the subject I have found a marked difference between bovine and human tubercle.

In the distribution of the bacilli there is a very great difference. On looking at the two specimens of bovine tuberculosis under the microscope, it will be seen that the tubercle is of the reticular variety, and that throughout it there are numbers of bacilli, singly and in groups. There are also large amœboid cells filled with them; and lastly, nearly all the giant-cells have a large number in their substance. The bacilli are also mostly in the reticular structure, and not in the caseous masses, or, at any rate, only in their edges.

This, it will be seen shortly, differs very much from what is found

in human tubercle. The bacilli themselves also seem to me to differ from those in the human subject, but this is a matter which I have only commenced to investigate, and on which I cannot say anything definite until I have compared the cultivation of the two forms.

I now come to acute miliary tubercle in the human subject. I have placed under the microscope two specimens of sputum from a girl, aged ten, in the third stage of the disease. One is under an ordinary quarter-inch objective, and the other under an oil-immersion lens of high power.

These preparations were made in the manner I have described in the 'Lancet' and 'British Medical Journal.' They are, however, both stained with methylene blue after the magenta, instead of chrysoidin, as the blue certainly throws up the bacilli and makes the process more useful for diagnosis. But the chrysoidin is the best stain to use for an investigation into the structure of the bacillus, as it is more transparent.

Under the high power it will be seen that the bacillus is rod-shaped, having an envelope, and containing in its interior spherical masses which have stained deeply. What these masses are remains to be proved, and this, I think, will be done when the bacillus is fully examined under cultivation. I hope, at a future date, to bring before the Society some specimens of the growing bacillus.

The next is another specimen of this sputum, dried on the cover-glass in the same manner as the two last described, but stained with a  $\frac{1}{4}$  per cent. aqueous solution of gentian violet instead of magenta and methylene blue. In this way the putrefactive bacteria, micrococci, and sarcinæ, which exist in the sputum, are brought into view, while the tubercle bacilli are absolutely unstained and cannot be seen; this shows how completely the magenta stain isolates the tubercle bacillus from the numerous other bacteria co-existent in the sputum. This makes a beautiful object for examination, from the diversity of forms it contains. There are rod-shaped bacteria of several different kinds, a number of sarcinæ, and a great variety of micrococci, some in masses, some in chains, and others isolated; they vary very much in size. There are masses of micrococci resembling those found in the liver and spleen in tuberculosis, but the distribution of these, in disease, is so varied, that they do not appear to have much pathological significance.

With regard to the preparation of sputum for examination, a few hints may be useful. I find from several specimens sent me for examination that the sputum is frequently spread too thickly. This is easily obviated by placing a little on a cover-glass, and cutting off small portions by crossing two needles and drawing them apart. By this means a little sputum is isolated from the mass, and can then be readily spread on the cover to a uniform thickness. Some specimens are not washed sufficiently in the acid, and so much of the magenta remains, that it is difficult to make out the bacilli.

Another frequent cause of failure is, over-heating the sputum. This is sometimes done before it is dry, so that all the moisture runs together, and masses of a hard material are formed, in which nothing can be seen.

The preparation must be allowed to dry in the air before it is passed through the gas flame. This will be quickly done if only a thin film is spread on the cover. In examining sputum it is necessary to get that coughed up the first thing in the morning, as it frequently happens that, when an effort has been required to get it up, no bacilli will be found, even in cases where they have before appeared in abundance. The reason is, that the sputum then comes from the back of the throat and not from the lungs.

There are also cases in which undoubted cavities exist in the lungs, while there are no bacilli in the sputum. These cases come under the clinical aspect of the question, to be discussed at some future time.

The next specimen shows a mass of bacilli in the middle of a small tubercle which is breaking down. This is from the same lung as No. 20, and has been treated in a precisely similar manner to the section of bovine tuberculosis already described. It will be seen that the bacilli occur in a mass in the caseous portion of the tubercle, and in such quantity that they may be easily discerned with a low power, such as an inch. I shall refer again to their distribution when speaking of the last two specimens.

The next is a section of the spleen from a case of acute tuberculosis in a child, in which I found bacilli in the lungs, liver, and spleen. This section has been stained with gentian violet, in the same manner as the lung and liver containing bacillus anthracis. In the field of the microscope there are masses of micrococci, and these were found throughout the whole of the spleen. They also

occurred in the liver in large numbers; and in the lungs, but here their number was very much smaller. They have been described, I think first by Klebs, as being the virus of tubercle.

Under microscopes Nos. 20 and 21, I have placed sections of tubercle in the lung from two cases of acute miliary tuberculosis, and I should like to call attention to the differences in their structure.

The specimen under No. 20 is from the same lung as No. 18, where a large number of bacilli are shown in the middle of a caseous mass.

On comparing these two specimens (20 and 21) it will at once be seen that they vary entirely in their structure, that is, in the structure of the tubercles themselves. In the size of the individual tubercles, their distribution through the lung, and aggregation in some parts, they present no material difference. Taking No. 20 first, the tubercles here present masses of cells, all more or less broken down, and the centre of many is undergoing caseation. But they show no fibrillar structure. No. 21, on the contrary, shows a distinct reticulation, and in nearly every case the reticulum contains a giant-cell.

I am not bringing this forward as anything new; it has been ably described and figured by Dr. Klein, in the second volume of his "Anatomy of the Lymphatic System." What I wish to point out is the connection between these different forms of tubercle and the bacillus tuberculosis. I have never examined lungs affected with the first form, without finding bacilli in large numbers. In almost every section, one or more tubercles will be found, in the caseating centre of which there are a large quantity of them, as shown in No. 18; while all the other tubercles contain some, so that it is easy to find them.

On the other hand, I carefully examined nine lungs affected with the second, or reticular, tubercle, before I succeeded in detecting a single bacillus; in the tenth case I found a few, but they were in the reticular portion of the tubercle, and not in the caseated mass as in the other form. They were also so few in number that it required great care and the use of high powers to make them out at all. They were either quite isolated, or in groups of from two to four at the outside. I have since found them in another case.

Dr. Klein, in his work on the lung before mentioned, suggests

that the reticulated form may be a more advanced stage than the other. I am inclined to think from the breaking down of all the tubercles in the first form, together with the large number of the bacilli found in them, that they represent a more acute form of the disease. Whether the acuteness is due to the large number of bacilli or *vice versa*, remains to be proved should this be the case.

I will now mention some of the differences I have found between human and bovine tuberculosis.

In the first place as to the structure of the tubercle. In every case of bovine tuberculosis I have examined, it is of the reticular form, with large and numerous giant-cells, resembling the reticular form of human tubercle shown at No. 21. These tubercles are aggregated together in large masses, and in many places have broken down and become caseous. So far they resemble the reticular form in the human subject, but here the resemblance ceases. When we come to consider the distribution of the bacilli in them the difference is at once evident. In the human lung I have shown that it is only in the first form that large masses of bacilli are found, and these in the midst of a caseating centre, and that this tubercle has no reticular structure.

In bovine tuberculosis the bacilli do not occur in large masses in the caseating part, but are scattered round its edges, as well as in the reticulum. A large portion of them are contained in cells, either giant-cells or the large amœboid cells found in all diseases of the lung substance.

In the reticular form of tubercle in the human subject, where alone giant-cells occur, very few bacilli are found anywhere, and none in the giant-cells.

From this it will be seen that many diversities exist between bovine and human tuberculosis; and to these I think will be added before long, a material difference in the bacillus itself.

With regard to the distribution of the tubercle bacillus in the other organs of the human body, I may mention that I have found it in the liver and spleen; but only in cases affected with the first or non-reticular form of tubercle. I have not yet found it in tubercles of the omentum, which seem to me to differ greatly from those in the lung.

I hope the Fellows will forgive the very crude way in which I have brought these few facts before them; one cannot well help this in a progressive inquiry into such a wide subject as tuberculosis. I

must also mention how much I am indebted to Messrs. R. and J. Beck, of Cornhill. With the exception of five of my own microscopes, they have kindly lent me all those in use this evening.

Dr. C. T. WILLIAMS remarked on the failure, in other hands, of Koch's and Ehrlich's methods of obtaining bacilli, and the universal success of Dr. Gibbes' mode. Had Dr. Gibbes detected the bacillus in the blood? He himself had not been able to do so. By Dr. Gibbes' method he detected bacilli in the sputa of nearly all cases of advanced phthisis, but not in *all*. He thought they were most difficult to find in cases undergoing partial recovery.

Dr. R. CROCKER thought Ehrlich's process more successful than Dr. Williams represented.

Dr. HEEON said that Koch's process was very difficult, and had been lately abandoned by Koch himself in favour of Ehrlich's process of floating the cover-slip in a solution of fuchsin. Fuchsin was precisely the same thing as magenta, though various specimens of either were slightly different in tint. The cover-slip was washed in nitric acid (one part to two of water), and the specimen then stained with methylene blue. This process, therefore, was practically identical with that of Dr. Gibbes, whom he personally thanked for his labours.

Mr. JABEZ HOGG thought the greatest advantage of Dr. Gibbes' method was that low powers might be used in it. The distinction between various specific bacilli was not at present clear, and it was questionable whether these bacilli of tubercle were really characteristic of this affection.

Dr. GREEN presumed that the Fellows were prepared to assume with Koch the essential connection between the bacillus tuberculosis and the tuberculous processes. Was there, he would ask, any relation found between the number of bacilli and the stage of the disease? He had still to hear what the conditions were which enabled the bacillus to produce its effect.

Dr. GIBBES, in reply, said that he had not examined the blood for bacilli. His method of mixing rosaniline with aniline to form a definite compound was totally distinct from Ehrlich's. Fuchsin would not combine with aniline.

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*December 11th, 1882.*

#### AN IMPROVED INVALID CARRIAGE.

By RICHARD DAVY, F.R.C.S.

Mr. RICHARD DAVY exhibited an Invalid Carriage devised by himself, capable of carrying one, or, at an emergency, six injured persons, in addition to the surgeon and the driver. The carriage was drawn by one horse, and could be shunted on to a steamer or railway truck;

was of large cubical capacity, and admitted plenty of fresh air and light; the door faced a platform for easy ingress or exit. The stretchers were comfortable and strong, and could be easily slung to the roof. Journeys not exceeding twenty miles could be undertaken by road. For the surgeon there was ample space, a floor easily cleaned, and ready means of communication with the driver. A cupboard beneath the driving-box contained surgical requisites and food. Mr. Davy commented on the exorbitant rates and bad accommodation furnished by railway companies, stated that his carriage had been appreciated by invalids, and pointed out the comfort arising from a system that required no change of conveyance in going from one place to another. The carriage was constructed by Mr. Burt, of Swinton Street, W.C.

#### TRANSPLANTATION OF SKIN IN THE TREATMENT OF A LARGE HAIRY MOLE.

By WALTER PYE, F.R.C.S.

MR. PYE read notes of a case of a large hairy mole on the forehead treated by transplantation of a skin-flap from the arm. The patient, who was exhibited, was fifteen months old when admitted into the Victoria Hospital with a very disfiguring hairy mole occupying the right half of the forehead. It was plain that simple dissection or destruction by caustics would involve great risk of deformity to the eyebrow and lid, besides the unsightliness of the resulting scar. It was therefore decided to cover the wound with a flap of skin from the forearm. The flap dissected from the forearm was left attached to the wrist; the mole was completely dissected off, the arm brought up, and the flap adjusted to the wound by several sutures. The arm was then fixed in position by strapping and bandaging, and the sides of the wound in the forearm were partly brought together with sutures. Within twenty-four hours the flap had united at all the points where it was in contact with the edges of the wound. On the third day, however, the side of the scalp became tumid, and the eye became irritated by the discharge. The flap was therefore detached from the arm on the fourth day, and after a little of it had sloughed the wound healed rapidly. There was, at the time the child was exhibited, only a fading

circular cicatrix marking the place of the original mole. The surgical interest of the case consisted in (1) the method of treatment employed, (2) the fact that the pedicle was taken from the distal side of the forearm with no ill effect, and (3) that the pedicle was divided as early as the fourth day.

Mr. ROSE had lately performed a similar operation on the hand, using a flap of skin from the abdomen. He divided the pedicle by degrees at the end of a fortnight. Mr. PYE was to be congratulated on the flap living after so early a division of the pedicle.

The PRESIDENT remarked that wounds in children united earlier than in adults. It was fortunate that the child could be induced to keep its arm quiet. He had never divided a pedicle at so early a date. He showed two photographs of cases. In the first, a hairy mole, he had used ethylate of sodium without success, and subsequently nitric acid. In a case of artificial nose he had successfully transplanted a large flap of skin without any pedicle from the forearm to the forehead.

Mr. DAVY had used for many years a very fine needle with thermo-cautery in removing hairy moles in preference to excision. In young infants, however, extensive wounds of the skin might be made without much ultimate deformity.

Mr. PYE said that he had fixed the arm with strapping and bandages, keeping the child under the influence of opium. He thought the mole could not have been removed by the thermo-cautery without leaving a large scar. The mole was raised and deep. He had no alternative between dividing the pedicle and letting the eye slough.

#### TALIPES VARUS TREATED BY PARTIAL EXCISION OF THE TARSUS.

By WILLIAM ROSE, F.R.C.S.

MR. ROSE read notes of a case of talipes varus in a boy, aged thirteen, who was successfully operated on by removal of a wedge of bone from the tarsal arch. Casts of the right foot, taken before and after operation, were shown, the second cast showing the foot in good position. The patient had been operated on by tenotomy four times at other hospitals without result. The operation was performed antiseptically on April 14th, and the boy left the hospital on June 3rd, a plantigrade. Mr. Rose brought forward the case as another link in the chain of evidence in favour of this operation, which should, of course, be restricted to cases in which instrumentation and tenotomy had failed, and where, without this last resource, the patient would remain a permanent cripple. The cast of another case was shown, operated on fourteen days previously, the position of the foot and progress of the case being very satisfactory.

The PRESIDENT doubted the necessity of removing so much bone. He asked whether Mr. Davy used Listerism?

Mr. DAVY was glad to see this operation making way, and promised to show some patients operated on by this method at a future day. The insertion of the peroneus tendon was as a rule involved. It was of no importance whether the tendon was cut or not. He did not use Listerism. He had had but one death in twenty-five cases.

Mr. ROSE said his patient walked away within two months of the operation.

### BRONCHIECTASIS TREATED BY TAPPING.

By C. THEODORE WILLIAMS, M.D.

DR. C. T. WILLIAMS read notes of a case of bronchiectasis treated by tapping. The case was that of a man, aged forty, admitted into Brompton Hospital in April, 1882, with a history of continued cough and expectoration (lately fetid) of a year's duration, following pleurisy. The physical signs pointed to double chronic pneumonia, adhesion of the right pleura and numerous bronchiectases of the right lung, the spots of gurgling being seated in the second and third interspaces near the shoulder, in the fourth and fifth outside the right nipple, and posteriorly near the lower angle of the scapula. Antiseptic measures failing to reduce the fetor, Professor Marshall, at Dr. Williams' request, made a vertical incision from the fourth to the sixth rib, along a line marked out by the latter, and plunged a trocar and director (specially devised by Dr. Hicks) to the depth of four inches in the direction of the root of the lung. Air hissed out of the opening, and a quantity of fetid matter and sloughing débris was forcibly ejected. The opening was enlarged, and a drainage-tube inserted. All fetor ceased, the cough moderated, the temperature fell to normal, and the patient took exercise in the garden. Nineteen days later the discharge increased and became thoroughly fetid, the temperature rising to 101·4°; there was some headache; vomiting, followed by drowsiness and left hemiplegia, ensued, and death by coma took place on July 6th, forty-five days after the operation. An abscess was found in the left cerebral hemisphere; there was chronic pneumonia, an adherent pleura on the left side, and numerous small bronchiectases, as well as some larger ones, in the left lung; the largest, of the size of an orange, having been the one tapped. No tubercular or caseous masses were found. The case illustrated the difficulties of dealing with

bronchiectasis, especially of the globular or saccular variety. By loss of their contractility the tubes were converted into mere bags of putrescent matter, which became absorbed and caused pyæmia. The diagnosis was tolerably exact, and, fortunately, the largest bronchiectasis was reached without much difficulty, and the first results of the operation were thoroughly satisfactory. He alluded to the value of a vertical skin incision over two inter-spaces, to allow, if necessary, a second puncture into the adjoining space, and to Dr. Hicks's director attached to the trocar and canula, which enabled the opening to be readily enlarged for the introduction of the drainage-tube. This was the fourth case of bronchiectasis which Dr. Williams had treated by tapping, but was the only one where death ensued from cerebral abscess; in two others septicæmia of the opposite lung was the cause of death. One patient was still living after two years' interval. The chief difficulty lay in the number of operations which were sometimes necessary to establish efficient drainage.

Dr. SYMES THOMPSON said that the difficulty in these cases was that the dilatations were seldom single. In one case Dr. Williams had made as many as six incisions. The irritation of retained secretions could not be successfully overcome by inhalations.

Mr. E. OWEN asked whether Listerism was essential to these cases. In a case he had recently operated on for Dr. Broadbent, excellent results had followed without it. Was it worth while keeping germs from the wound while they could enter by the bronchi?

Mr. HUBERT SMITH thought antisepticism useful when pleural adhesion had not taken place.

Dr. WILLIAMS, in reply, said that in such cases something must be done, otherwise the fetor would render a hospital uninhabitable. He had left the surgical treatment of the case in Mr. Marshall's hands. Free drainage was the main point. It was his first care before operating to ascertain that the pleural layers were adherent.

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*December 18th, 1882.*

## THE TENSION OF THE ABDOMEN AND ITS VARIATIONS.

By J. BRAXTON HICKS, M.D., F.R.S.

THE varying states of tension in the abdomen have not received, it appears to me, sufficient attention on the part of the profession ; and yet it is evident even upon small consideration that alterations in its tension must influence in many ways, not only the condition of the abdominal contents, but also of the thoracic as well as of the vascular system, and the state of the general system. It will also be easily seen that on the other hand, the conditions of the general vascular system, the states of the thorax, and of the muscular system have in their turn important influences on the abdominal tension. And foremost among the influences affecting the tension is the state of the parietes, whether of laxity or undue firmness.

In view of these considerations I have ventured to arrest your attention this evening in order to review the more prominent points of the subject, and their clinical bearing. And I trust, I shall not be thought to be detaining you whilst I take a cursory view of the abdominal cavity.

Viewed with regard to interior surface we may roughly consider it as an ellipsoid cavity; and this description holds good more particularly in regard to the front wall. It is true that posteriorly the regularity of the form is interfered with by the vertebral column, which, especially opposite to the umbilicus, protrudes so as to bring the posterior wall into closer proximity to the anterior than is consistent with an ellipsoid.

Yet for the purposes of considering the state of tension the figure above mentioned is sufficiently accurate. And in the remarks which follow, I shall, so far as concerns the purposes of this paper, consider that part of the peritoneal cavity which dips down beneath the brim of the pelvis, as a part of the abdominal cavity.

Under ordinary healthy conditions in the adolescent, the walls of the abdomen should be firm, and, viewed in profile, the part about the umbilicus should slightly project beyond a line drawn from the ensiform cartilage to the symphysis pubis.

In section, at the level of the umbilicus, the cavity has a reniform shape, the anterior wall approximating more or less to the circular form, according to the amount of the distension of the intestines by gases. Above and below the umbilicus the shape of the section depends on the form of the bony rings to which the walls are attached, namely the form of the base of the thorax above, and on that of the pelvic bones below; and thus it is that the sections preserve in these situations more or less of the ellipsoid. Were it not for this attachment the shape of the abdomen would be more or less spherical, as is clearly indicated whenever the cavity is over distended by gas or by fluid.

The form of these bony rings increases the transverse diameter, and this is more noticeable in the lower one, especially in the female; and in passing it may be remarked that this is advantageous in two particulars at least in the vascular supply, on either side, to the pregnant uterus is not so readily pressed upon, as it would have been, had the also been less expanded, and in that this form also permits accommodation for the intestines when displaced by the pregnant uterus, lessening tension. Now, although it will be readily admitted that the upper portions of the abdominal cavity, namely, the part enclosed within the dome of the diaphragm, belongs clearly to that cavity; yet it is not so generally recognised that the part dipping down beneath the brim of the pelvis ought to be considered an integral part of the abdominal cavity. And yet a moment's observation will show that it is so; in other words, that it is affected by tension in the same manner as any other part of the abdomen. Nothing shows this more clearly than the fact that this part which dips down does not, as sometimes is thought, become bulged downwards to any extent, when the cavity has become over distended by gas, as in tympany; or by fluid, as in ascites, or monocystic ovarian dropsey. On the contrary, observation will show that this portion is rather drawn upwards, more to the level of the brim than it was before, and, consequently, that the uterus and appendages are elevated in the same degree; or expressing this in other words, the over-distension of the abdominal cavity tends to obliterate all inequalities in its disposition to assume the spherical form, according

to the laws of physics. Of course, if from any cause this part has been greatly over-stretched and weakened, the conditions are altered, and it may happen that this part is rather depressed when there is a distension of the cavity; but in a natural state and even in moderate relaxation, the tendency is to elevation. But this and the behaviour of the uterus will be alluded to more particularly hereafter.

In considering the abdominal cavity as an ellipsoid liable to be over distended by gas, it must not be overlooked that it is not distended by free gas, but, as the gas is retained in coils of intestines, it may be compared to an elastic ball distended firmly by a series of small elastic balls distended with air. Of course this comparison is not strictly parallel, because the gas in the coils can move forwards and backwards, and may ultimately escape from the cavity; but during the time of retention the simile is sufficiently accurate; for whatever movement takes place there, is immediately an adjustment and equalisation of pressure in every direction. Any mass introduced within would be subjected to an equal pressure in all directions; and even supposing this mass were attached by one point of its surface to one spot of the inner surface of the external ball, it would be sustained in position by the lateral and vertical pressure of the small air-balls, excepting so far as gravitation modified these forces; at any rate, there would be no tendency for this mass to be pushed outwards.

If, however, the solid body did not wholly enter within the sphere, but projected only a slight degree into it, then the pressure would tend to expel it, more or less entirely; and this happens to the uterus in the normal state. For the coils of intestines in the recto-uterine pouch descending sometimes even below the level of the os uteri, and pressing posteriorly, and laterally in part, press the uterus, not down but slightly upwards and forwards, where it is supported by the bladder empty or distended, which in its turn receives counter support from the pubic bones. But when from laxity of its surroundings and supports, and from its increased weight, it falls low down, it loses what it received before of lateral support from the intestines.

Hence, we have in healthy states what Dr. Matthews Duncan calls the "retentive power of the abdomen." Some have denied the existence of this power; but perhaps we may understand it better by supposing an india-rubber ball fully distended by air, and

resting on a ring too small for it to pass through. If under these conditions traction were made on the part of the ball dipping through the ring, it would be drawn lower down, but as soon as the traction ceased the part would instantly spring up and resume its shape; and if any mass had been embedded in its walls at this part it would resume its original position. Again: place a man on his back, put on the centre of his abdomen a heavy weight; this part would be depressed; but it would at once return to its previous form on removing the weight. The same effect would be produced in any part of the abdominal cavity, including the pelvic and thoracic portion; and thus any substance fixed to its walls would be affected in like manner. If this parallel be true, then we can easily see how flaccidity of the abdominal cavity would lessen this property, and in extreme cases would annihilate it. Extending our parallel, we can see that if the elastic bag were entirely emptied of its air it would collapse, and no retraction would occur. Thus it is not difficult to conceive that when the abdominal walls are in a state of healthy tonicity, and the intestines fully distended with gas, this retentive power or conservative force is at its best; while in persons with flaccid parietes and with intestines only half filled with gas, the property is deficient; and that in proportion to the abdominal laxity. And it should be here remarked that a condition of over-distension, as in tympanitis, cannot cause the pushing out of masses imbedded in the walls, as long as they are attached firmly to the walls and are an integral part of them; but will only push out such portions of the walls as have been temporally depressed. Any part fixed to, or an actual part of, the wall would become more fixed or immovable, in correspondence with the increased firmness and rigidity of those walls resulting from the general tension. At the same time, alteration of distance from the centre would occur, corresponding to the recession of the walls from their centre by the increased distension.

Now, the pressure exerted upon any body surrounded by the intestines will equal the pressure exerted upon equal surfaces of the intestines themselves, and upon equal areas of the inner surfaces of the parietes; and the pressure upon any portion of an organ projecting partially within is equal to the pressure exerted upon an equal area of the intestines. But this pressure varies much under normal conditions.

Let us suppose a condition, where the amount of gas in the

intestines is exactly sufficient to fill the abdominal cavity without putting any tension on the muscular walls (although in the perfectly healthy state there should be a slight excess of pressure from within). When inspiration takes place, a certain amount of pressure is produced which is partially, but not entirely, relieved by the yielding of the parietes. The movement is exceedingly well shown in the readings of the gastrograph shown by me in the 'Royal Society's Proceedings,' March 26th, 1879, in a "Note on the Supplementary Forces concerned in the Abdominal Circulation in Man."

No doubt the simultaneous expansion of the base of the thorax, in lifting the muscular parietes further from the centre of the abdominal cavity, and thereby enlarging it in that direction, takes off some of this tension produced by the descent of the diaphragm, yet there is a considerable residuum, which is only interfered with by violent expansions of the chest, as from coughing, laughing, sneezing, and when the tracings indicate that there is marked depression of the abdominal walls as well as high increase of their bulging. And thus in *ordinary respiration* we have a certain amount of intermittent compression of the abdominal viscera and their contents, and as one of the results an interference with the vascular equilibrium. This has been also shown by direct experiment on the venous pressure, and thus in like manner the flow of the secretions from the glands is assisted and the blood in the portal system helped forward in the direction of its current, the arterial current is checked, and the systemic venous current flowing into the abdomen retarded, while that tending towards the thorax is hastened. All these effects are intensified in proportion to the compression exerted on the abdomen by its muscles. The maximum of this pressure has been calculated by Professor Haughton to be equal to from 32.93 lbs. a square inch to 38.47 on the square inch.

But increase in the ordinary tension is produced by every movement of the trunk and limbs; and very notably so, as I have already remarked, by laughing, sneezing, and coughing. This I have shown in the note above referred to and in another "On the Auxiliary Forces Concerned in the Circulation of the Pregnant Uterus in Woman," March 26th, 1879. And this protrusion outwards of the abdominal walls by the inspiratory act, is not interrupted by the presence of the pregnant uterus, or of an ovarian cyst principally or wholly containing fluid, as is shown in the tracings in the notes already mentioned; for containing for the most part fluid contents

they behave in the same manner as do the intestines filled with gas. This pressure on, and movement in, the pregnant uterus, must tend to move its vascular fluids forwards, and thus, in a distinct though gentle manner, facilitate the flow of the tardy current through its sinuses ; and so also do the more vigorous movements of the body and limbs produce a similar though greater effect ; and thus it will be seen that the popular notion that activity during pregnancy assists the growth of the ovum is borne out, for increased supply of nutriment is thereby afforded the foetus.

The same impulse must be given to the uterine circulation, though in a more marked degree, by violent and sudden movements, especially coughing, sneezing, laughing, &c. Helpful even as these may be in a moderate degree, in a severe form they put a severe strain on the walls of the blood-vessels, even to their rupture ; and consequently may lead to haemorrhage, separation of the placenta, and its many results.

It has been already remarked that the pressure is equal on equal areas within the abdomen ; and therefore it is important, consisting as the walls of the abdomen do of tissues of various kinds, that the whole should be of equal strength, if dangers and inefficiency are to be avoided. The instant any one tissue fails to come up to the standard of strength, we find troubles ensue, as is well shown in the occurrence of hernias of various kinds. Particularly is this noticeable where the abdomen has been over-distended by pregnancy, fluid, &c., and where afterwards the muscles have regained their vigour, while the fascial and tendinous portions have not recovered their natural resistance. Here we see upon full muscular action, such as in rising from the supine posture, a bulging in the median line between the recti, and on the outer sides of these muscles ; and a bulging down of the floor of the pelvis, with a consequent descent of the uterus towards the vulva. There are other points in regard to the forces exerted on the uterus to which I shall return later on.

Let us now consider the effects of pressure produced either by the generation of gas within the intestines, or by the contraction of the muscles, for they are much the same in either case, upon the intestines themselves, or on the several viscera wholly or partially within the cavity.

Respecting the reciprocal action of the intestines on themselves, we must have regard as to whether they are distended with gas

entirely throughout their length, or only in certain portions. Where every part is full, the calibre is sustained throughout, and the effect of their mutual pressure is only to reduce it so far as the pressure can compress the gaseous contents, and to cause the section of each coil to assume a polygonal form. But where there is an absence of gas in any portion, or an escape, as occurs in the rectum, then the pressure, by bringing the walls of the empty portion into contact, checks in a degree the effect of the peristaltic movement ; and hinders the progress of the contents towards the anus. This receives illustration from the well-known inefficiency of violent straining in constipation ; for when the rectum has been evacuated by the general downward pressure, no further effect is produced by continued straining till the peristaltic action has brought more faecal matter down into the rectum. When, as in cases of habitual constipation from torpid rectum, the peristaltic movement is absent, no amount of straining will produce any evacuation. Hence it is that accumulation of gases in the intestines tends to increase constipation ; and this is one explanation of the obstinate constipation of extreme tympany.

But where a hollow organ, partly intruding itself into the abdominal cavity, has its aperture externally placed, the pressure of the intestines acts in various ways and degrees according to the extent of its intrusion. When the organ is almost entirely within, the effect of the pressure will be to compress equally in all directions upon the portion within. But as the aperture is outside this influence, there will be an absence of counter-pressure in the proportion of the size of the aperture to that of the remaining portion of the organ. Now the uterus is frequently, and during pregnancy commonly, under these conditions ; the coils of intestines, filling Douglas' pouch as low down as, and sometimes lower than, the os, press on the posterior half of the cervix, while counter-pressure on its anterior half is made by the bladder and its fluid contents, so that only a very small portion of its total area lacks support ; so small, indeed, that in early pregnancy, for all practical purposes, the uterus, if situated as high as it should be, is supported or pressed upon equally in all directions.

But should the uterus, instead of this, descend, as it frequently does, so as to rest on the floor of the vagina, then the relative excess of pressure from above must tend to extrusion of its contents, particularly under the violent exhibition of this force, as in lifting,

coughing, &c. Thus it may be perceived that the position of the uterus during pregnancy is of importance; and that where a low position of the uterus exists during pregnancy, especially in persons liable to miscarry, attention should be directed to the rectification of it.

In labour, when the membranes and foetal head have pressed up the intestines, there is an excess of pressure from above, the result being a downward movement; and as the uterus becomes more emptied, the greater relatively is the force from above because of the lessening of the lateral.

With regard to the bladder the case is different; for it is not so much within the cavity. Both in the male and female, it can only be considered as partly bulging into the abdomen. Consequently the intestinal pressure acts without much opposition in the direction of its outlet. However, in cases of extreme over-distension, and particularly in women, the conditions approach in a measure those of the pregnant uterus. Thus, in general, the forces of abdominal tension tend to be exerted on the bladder in the direction of its outlet, unless restrained by the exertion of the sphincter; and this is shown by the expulsive effects of coughing, straining, and indeed of slight movements of the body, in cases where the power of the sphincter vesicæ is impaired. It is true that in the male the intestinal coils in Douglas' pouch do press on the base of the bladder, but this effect is largely lessened by the density and resistance of the prostate gland.

Reverting to the effect of the pressure on the uterus, more particularly in regard to its influence on the contents, we must take into account the great relative thickness of the uterine walls; which doubtless in the earlier stages of pregnancy has considerable influence in mitigating the force of external pressure. Moreover the density of the walls of the os and cervix in the unimpregnated state and in early pregnancy is almost sufficient entirely to resist the pressure of the surrounding parts. Consequently the contents, when the uterus in early pregnancy is normally placed, are not so much influenced by the ordinary actions of the body as at a later period, for instance after the second month.

But as pregnancy advances toward completion, if the intestines are driven out of the pelvis, the conditions of pressure are altered; and the walls being more compressible, the force is exerted in a downward direction; this is resisted principally by the lower seg-

ment of the uterus and its mouth. So long as this part remains closed, the pressure on the inner surface of the uterus is equal throughout, but when the os yields, the membranes, unsupported at this part, yield and protrude up ; till the expansion of the os the external pressure has no effect specially in this direction. And it is interesting to note the arrangement of labour in this particular ; for what are called the "auxiliary forces" and "bearing-down pains" (in reality pressure put on the abdominal contents by the muscular action of its walls), are not brought into play till after the expansion of the os. The force concerned in the first opening of the os uteri is uterine ; as the os proceeds to full expansion, the auxiliary force is brought into play ; and the latter gradually develops in power as the uterus is emptied ; and, as I have before remarked, when this is half accomplished, the pressure on the walls, equalised over its surface by the intestines, tends entirely downwards, the lateral pressure having ceased to exist. Then it is that the greatest force is required ; for as the head approaches the outlet difficulty increases. The beauty of this adaptation to the requirements of the case will strike every one.

But the pressure of the intestines is not merely to assist in expelling the uterine contents. It has a conservative effect in preventing what may be called the recoil of the uterus. I mean this, that when the head of the foetus has passed through the os uteri but has become arrested by some obstacle in front, and the force of the uterine contractions is expended on the upper vagina and lower uterus, and probably the round ligament, the support given by the action of the abdominal walls through the intestines counteracts the excessive strain, thereby lessening the chances of laceration of vagina. When this support is not given or is weakened, separation of the uterus from the vagina may be expected if the uterus possesses much vigour ; and may be especially anticipated in women whose abdominal parietes are very lax, and vaginal tissues weakened.

Before proceeding farther in the subject it will be well to describe the apparatus by which the observations have been made, and then examine more particularly the facts it illustrates.

This instrument may be briefly described as being like the Cardiograph of the late Dr. Sibson, having three legs, and in the centre between them a button connected with the Tambour ; or one the shape of a kettledrum. Either of these is connected with the

index of the revolving drum by an elastic tube. It is tied rather firmly to the surface of the abdomen (the person lying on the back) by means of a tape passed round the body. When inspiration occurs, the portion enclosed within the area of the three legs, or within the ring of the drum, being less restrained, rises up, and pressing the button or the tympanum of the drum indicates the extent and duration of the act. This as usual is recorded by a revolving cylinder, and a wave-like mark is traced which I have called the respiratory wave.

This tracing, although always possessing a certain regular character, varies in many respects in different states of the respiratory organs and abdominal tension.

It will first of all be noticed in normal conditions of tension and respirations that there is little or no rest between inspiration and expiration, and but a slight one between expiration and inspiration ; and this is in accordance with what has generally been acknowledged by physiologists. As a rule we shall find that inspiration is rather more rapid than expiration, for the upper two thirds of the wave. It will also be noticed that the expiration at its termination is prolonged. But in a relaxed condition of the abdomen the time required for the depression of the diaphragm to raise abdominal tension is greater than under the normal condition ; and thus the bottom of the wave is broader than in the normal state ; and often the expiratory side of the wave is more abrupt than the inspiratory. To this point I shall again allude. But there will also be observed on every tracing a number of secondary marks. These are the arterial impulses, but slightly indicated in the normal respiratory wave, most marked in tracings where the abdomen is very flaccid. These arterial marks are more noticeable during the pause, i.e. when the respiratory tension is in abeyance. But I must leave this subject; which, though interesting, does not belong to the subject matter of this paper.

Now the more tense the walls the more precise and regular, *ceteris paribus*, is the respiratory wave-tracing ; not that the eccentric movement of the abdominal walls is then as great as in the normal and relaxed state ; but because when the walls are very flaccid the wave is slight, imperfect, and hesitating, and, as before remarked, often not so long as the pause. When under either of these conditions an arm, or leg, or the head is moved, the effect is immediately shown on the tracing by a rapid elevation and fall of the

line, which ceases even if the limb be kept in this new position. Again, if a cough takes place, a series of elevations and depressions of the tracing takes place till the coughing has ceased. And a point of much interest is to be observed here, to which I have already alluded, namely, that the depressions go far below the normal line, showing that the sudden elevation of the thorax actually produced a vacuum. This point will be doubtless recognised as an important one, for under many circumstances, such as occur during, or after labour and in cases of wound of the abdomen, there would be a possibility of indrawing of air into an open vessel or gap. Again, in consequence of this temporary opportunity for an inrush into the abdominal cavity, there is a liability to the insuck of unwholesome matter into veins, lymph-spaces, and lymphatics; and, as there would be a rush of blood from the veins of the lower limbs, a facility is given to the translation heartwards of any clot in them. And for the same reason any sudden action, preceded generally as it is by sharp inspiration, must be credited with the same tendency; and for the same reason air can be drawn into the vagina if the vulva be lax and patent, or even into the uterus if its os be in the same state.

The state of tension produced by inspiration, the balance, that is, between the depression of the diaphragm and the elevation of the ribs, may be for distinction's sake called the "respiratory tension," while the condition of tension at the pause may be called "passive tension." This state of passive tension is a very variable one, depending on the resilience of the walls, the amount of gas in the intestines, the size of the other viscera, the amount of adipose tissue about them, and the condition of the thoracic cavity and its viscera. In a normal state we may, for practical discussion, say that the two great factors are the gas in the intestines, and the firmness of the abdominal walls.

It would be difficult to estimate accurately from such variable elements the normal amount of pressure of the respiratory tension.

Even when the walls are in a relaxed state, as after the birth of the foetus, one is cognizant of a marked degree of pressure when the descent of the placenta is watched, for upon each inspiration there is a marked advance of it downwards. I have already described the effect of normal inspiration on the contents of the abdomen. To a certain extent we may say that it is but an increased state of

normal "passive tension." The pressure or support which the latter gives the viscera and vascular system, maintaining as it does the normal status within the abdomen, is of much importance to them and to the general system, as will be perceived when we watch the effects produced by an increase or diminution of it.

First of all, let us examine the effects of increased "passive tension" by the light of the previous remarks.

We will suppose the occurrence of tympany—rapid distension of the intestines with gas. There will be a general tendency in the abdominal cavity to assume the globular shape; depressions in its walls will be levelled, whilst the natural projections will be drawn in. Thus the recto-uterine pouch will be drawn up, the uterus along with it, and the bladder also in a certain degree. The umbilical depression will be filled up, and the lower ribs elevated. Although the diaphragm would be generally pushed upwards, yet the form of its concavity would alter in accordance with the tendency in the abdominal cavity to the assumption of the globular form. The effects on the blood of the pressure would be similar to that which takes place during inspiration, only that it would be constant and more severe, whilst the "respiratory tension" would increase it still more. Thus the blood on endeavouring to enter the abdomen would be retarded both from above and below, and the return current from the lower extremities would be impeded, with this additional disadvantage that the aorta, although itself pressed upon, yet would overcome the resistance better than the veins; and this would increase the venous turgescence and engorgement in the legs, with a tendency to oedema. The same effect, though not so marked at first, would take place above the abdomen, partly by the difficulty of executing the respiratory act, and partly by the detention of the blood in the aorta, and the consequent embarrassment of the circulation in the heart. The portal system would be interfered with, and the return current from the lower rectum impeded, with after a time distension of the haemorrhoidal vessels would follow. The general circulation in the portal system would be checked, and this, with the retardation of the cardiac current, would tend to engorgement of the liver; though in some measure the pressure on this organ would counteract the effects of this. In like manner would all the abdominal organs be interfered with and their proper action checked. The kidneys, for instance, would find greater difficulty in excreting urine, and what quantity was formed would find a difficulty in making its

way into the bladder because of the pressure on the ureters. The bladder also would be less able to expand. Again, the pressure on the intestinal structures would retard the functions of assimilation, and the nutrition of the body would be thereby diminished. Also pressure on the sympathetic ganglia and nerves tends to depression of all its functions, and notably the cardiac, thus forming one, and not the least, factor of many that lead to death in abdominal diseases. A good instance of this is shown in cases of tympany from obstruction where paracentesis of the bowel has been performed with immediate relief of the urgent symptoms. A certain amount of circulation will of course be kept up, notwithstanding this high pressure, and after a time relief will be obtained by the yielding of the abdominal walls, and thus accommodation will occur in the dilatation of the vessels, tending more or less to the ordinary state of things, unless a further increase of distension occurs. When the abdomen is distended by fluid the same symptoms occur, but, the density of the fluid being greater, the effects of pressure by gravitation are added, making posture a point of more importance; and thus we have, when the body approaches the vertical, an increased pressure on the vessels and more retardation of the venous return from the lower extremities and of the trunk below the peritoneum, and consequently an earlier appearance of œdema, haemorrhoids, &c.; and so, also, when the patient rests on the back, the flow of urine from the kidney is impeded earlier when fluid is present than air. The same remarks apply to the distension produced by the pregnant uterus, the more solid ovarian tumours, &c., in so far as these press on the veins, but their solidity, causing them to rest on certain parts instead of moulding themselves into every irregularity, prevents them pressing so universally.

To illustrate the influence of abdominal tension on the general vascular system, let us consider the following case:

A plethoric man, that is, one with residual blood in excess, the passive tension of his blood-vessels at the highest point compatible with safety, always a large eater, and therefore with a capacious stomach; suppose such an one to have eaten and drank to his full, the passive tension of his abdomen would be greatly increased, the capacity of his thorax somewhat lessened by the inability of the diaphragm to descend, the respiratory act impeded; by all of which means his vascular tension would be proportionally increased. Thus he would be placed in jeopardy of rupture of some part of his

vascular system. Something similar may occur in pregnancy, when with a daily increasing abdominal tension from uterine enlargement a serious addition to it is produced by a large meal, or by unwholesome food producing gaseous development in the intestines. Thus, an increased vascular tension is produced; and this, especially when acting in combination with the vascular tension accompanying albuminuria, produces various disturbances, uterine haemorrhages, eclampsia, &c.

From these and like considerations it will be seen that the tension of the abdomen plays a not unimportant part in the condition of the vascular system; and that whilst its excess leads to disturbance and danger, so its decrease leads to faults of an opposite kind. It has been already pointed out that a certain amount of tension ought to exist, being that which gives rotundity and slight bulging in the profile, and sustains by its even pressure the walls of the blood-vessels within the cavity, and notably the portal system. The normal amount of blood in these vessels is therefore the balance between the normal vascular tension and that of the abdomen itself; the balance between the pressure of the various organs within and the resistance of the parietes.

Let us now consider the effects of lessening this tension of the abdomen—view an extreme case. A woman who has had her portal system previously dilated, as also her venous system generally, and, as an outcome of the same cause, an effusion of serum within the peritoneal cavity. This fluid is drawn off quickly; the pressure being removed, the walls of the vessels yield; and, their capacity being greater, the blood coming from the arteries remains in the veins till their walls are again under tension, and thus in a short time the arteries are imperfectly supplied. These also to a certain extent are rendered more capacious for the same reason, and absorb from the central organ and general circulation some of its supply. But, pressure being removed, the capacity of the vena cava and abdominal aorta, with its branches, is increased, and more directly and quickly the heart is robbed of its blood, and danger of fatal syncope arises, as is well recognised by us all. Of course the amount of danger present in such cases is dependent upon many circumstances, e.g. upon the dilatability of the vessels, particularly the veins, upon the amount of residual blood, upon the elasticity of the tissues, upon the position of the body, and upon the dilatability of the heart, &c.

The same phenomena occur in tapping an ovarian cyst, though generally in such cases the organs of circulation have not been previously impaired. After delivery the emptying of the uterus permits the blood to flow into the abdominal cavity, and thus there is a greater amount of blood near at hand, ready to flow into the uterine veins, should relaxation of this organ occur. In healthy contractility, the uterus will overcome the increased pressure thus produced, but if it be relaxed, according to the extent of relaxation there will be greater or less tendency to haemorrhage. It may be rejoined that the portal system filling at the same time would draw from the venous side, and thus lessen the blood-rush into a relaxing uterus. But the anastomosing of the haemorrhoidal and uterine veins probably compensates for this. Now, for one to say that the tendency to post-partum haemorrhage is increased by the lessening of abdominal tension resulting from the emptying of the pregnant uterus, would at first sight appear to be stating that nature's arrangement was faulty. Doubtless in a fully healthy state it is corrected by the elasticity of the abdominal walls, and by a healthy contractility of the uterus, sufficiently, that is, for safety. But sudden deaths after delivery, especially with flooding, are well known. The abstraction of blood from the heart after tapping in the manner above described, fully explains the reason, especially if death occur upon the assumption of the vertical posture.

The same want of support has also a detrimental effect during the puerperal state, because the tendency to out-push common to wounds and abrasions in the healthy state of the vascular system is taken away, and an opportunity given to an in-draught or in-suck upon any sharp movement of the thorax, limbs, or body in general as above explained. Thus unhealthy matter may find its way into lymph spaces, clots plugging the uterine veins may be disturbed, or air may enter open veins and follow the blood current to the heart. Hence will be seen the advantage of good vascular tension, good tone of muscles, and firmness of uterus, and the disadvantage which the contrary entails. It will also be seen that the plan of bandaging the abdomen after labour, formerly employed more frequently than now, has reason on its side; and that properly applied and evenly distributed the bandage is useful in many ways both during and after labour. It will, of course, be noticed that vascular tension is diminished both by recent actual emptying of the vessels, and also by the laxation of the abdominal parietes, and that both of these acting

together will naturally intensify the effect. Lessening of the vascular tension may, as is well known, also arise from vaso-motor disturbance, but this does not belong to the subject of this communication, except so far as blood-loss may lessen the *tonicity* of the vascular system.

For the reasons above given laxity of the abdominal walls tells detrimentally on the general system, for thereby is given the possibility of absorption of detrimental matter. In the plethoric, and in those of high arterial tension, it is possible that these effects will be less noticeable, but in those that are the opposite this draught of blood into the abdomen and its retention there lessens the vigour of the whole body. The person looks thin instead of plump; shrivelled, and prematurely old. In men this is not so strongly marked as in women who after child-bearing have not recovered from the relaxed state of the abdominal walls, and who, in addition, have long ceased to have appetite for food, and have existed on the slenderest of dietary, and consequently have nothing solid or gaseous in their intestines. Of course the whole of their condition must not be put down to the want of a normal condition of passive tension, but its absence adds considerably to the general effect.

There is another condition of the abdomen in which, though it is difficult to say what is the state of its tension, yet the absence of gaseous contents is very marked. One might say that the intestines are almost entirely empty; holding the smallest amount of either gas or faecal matter. This is by no means a rare case, occurring principally amongst the middle and upper classes, in those who, delicately nurtured, have made efforts beyond their strength; or in those who, having an abhorrence of being thought stout, have refrained from taking sufficient nourishment, and in whom after a time the desire for food diminishes, and even a dislike for it comes on; constipation then ensues, and every time an action takes place, so much disturbance is felt that a dread of it causes a still further abstention. These women become thin, and after a time are constantly complaining of uneasiness in the abdomen, back and pelvis; then a general neurotic condition ensues, and they pass from one physician to another, and then to the obstetric. In these cases we find a concave abdomen, the parietes firm and pressed back towards the vertebral bodies. The aorta is readily felt. The profile of the abdomen is concave. The capacity of the abdomen is therefore lessened. The absence of gas in the bowels permits

atmospheric pressure to press in the walls, and probably thus to keep up the tension to a certain point.

Indeed, from what I have observed I should consider that there is, besides the atmospheric pressure, a kind of spasmodic contraction of the muscles of the walls, and that these forces combined press on the various organs within in a way different from the uniform elastic support given by the intestines, and that thus the stomach and intestines are compressed, the anterior edge of liver pressed downwards, and its relation with the portal vein disturbed ; the mesenteric tissues also being compressed perform their functions imperfectly and thus nutrition is impeded. The kidneys even suffer somewhat, though to less extent, and the bladder is prevented from rising as it fills, bulges backwards, and thus tends to disturb the position of the uterus, which once displaced backwards from the vertical, becomes gradually retroflexed or retroverted ; and this tendency is increased by straining efforts to overcome the constipation so frequent in these cases. However, sometimes anteflexion or version is produced if the uterus be already so inclined, or be below the normal position in the pelvis.

Now although these persons are thin and spare, they seldom present the pallid, shrunken, and worn-out look visible in those with relaxed abdominal walls.

Continuing these considerations, we can also perceive that the relaxed condition of the walls would give rise to disturbances and inconveniences to the organs within by reason of want of support, whereby gravitation acts more freely ; and thus dragging on their attachments would take place according to the position of the trunk, and this notably in the case of the liver and the gravid uterus, the fundus of which would drop to the dependant part. Sudden movements of the body likewise would more severely strain the attachments of the organs, than when they were well supported. These strains are not unimportant ; rupture of the attachments can take place in this way ; ovarian tumour and fibroid of the uterus are liable to give trouble thereby.

Besides these points there are many others which will present themselves to careful observers. Thus laxity of the abdominal walls will permit a very large development of gas to occur within the abdomen ; for, doubtless, resistance to expansion has some effect in preventing rapid development of gas or fluid ; and over-distension of the intestines tends to constipation, for thereby the peristaltic

movement is checked and the grip of the intestines on their solid contents in a measure prevented.

Again, undue firmness of the parietes interferes much with the comfort of the patient during the increase of the uterus in pregnancy, as is shown in primiparæ, and adds necessarily to the general vascular tension ; and this may serve to explain why eclampsia is more common in first pregnancies. At least this condition may add to the liability. And during the increase of an ovarian tumour there is a much earlier evidence of distress from pressure in a woman who has had no children, than in those who have been previously distended; and thus in these states, as also in the flatulent, we have evidences of increased vascular tension in the high colour of the face, headaches, &c.

Peritonitis (except in the septic form) is attended with high abdominal tension, and the respiration is said to be "thoracic." This would lead one to think that there is no movement within the abdomen. But the gastrograph shows that the diaphragm is descending, and the respiratory wave is well marked. The tension, doubtless, enables the instrument to record well and to indicate the slightest action. The internal tension during this complaint is generally recognised as useful to give steadiness to the peritoneum, and to withstand in a measure the more severe frictions produced by coughing, &c., and also to lessen the extent of movement necessary for respiration.

Allied to this point is another worthy of notice. I pointed out at the beginning that when the pregnant uterus was in its inactive state, or when an ovarian cyst occupied the abdomen, its presence made no difference in the respiratory tracing, because it behaved according to the law of fluids.

But it remains to be mentioned, that should the uterus firmly contract or should the ovarian tumour be firm and solid, the respiratory wave will be nearly obliterated. Thus, an indication is given of the occurrence of the intermittent contractions of the uterus ; or of the solidity of a tumour which is in contact with the anterior wall of the abdomen. How far this may assist in diagnosis can hardly be stated now ; probably the hand will form a more facile medium for diagnosis.

The influence of the abnormal thoracic movements on the tension I have not as yet fully examined, except that of ordinary coughing. Doubtless points of interest will be found.

THE LETTSOMIAN LECTURES ON  
THE TREATMENT OF SOME FORMS OF VALVULAR  
DISEASE OF THE HEART,\*

Were delivered by A. ERNEST SANSON, M.D.

On January 8th, 22nd, and February 5th.

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*January 15th, 1883.*

A CASE OF INTESTINAL OBSTRUCTION FROM VOLVULUS TREATED BY ABDOMINAL SECTION, WITH REMARKS ON THE OPERATION.

By J. KINGSTON FOWLER, M.B.

HENRY F—, aged forty, a wine porter, was admitted into the Middlesex Hospital under my care on August 7th, 1882, suffering from intestinal obstruction. His history up to the present attack presents no feature of interest. He had for some years worn a truss for double inguinal hernia; both ruptures were easily reducible, and had never caused him any serious discomfort. On August 3rd, about 6 p.m., whilst at work, he was suddenly seized with a severe pain just below the umbilicus; this was relieved by the application of hot flannels. On the 4th, his bowels acted slightly in the early morning, but since then nothing had passed per anum. He continued at work until the evening of the 5th, vomiting five to six times during the day, suffering from some abdominal pain, and being unable to take food. He then took to his bed, and remained there in much the same condition up to his admission at 7 p.m. on August 7th. He had passed very little urine. He had been under medical treatment, which appeared to have consisted chiefly in the administration of castor oil and other purgatives.

\* Published by the Author. London: J. and A. Churchill. 1883.

On admission the patient was much collapsed, the expression was anxious, and the features pinched. The inguinal herniae were easily reducible; the abdomen was moderately distended and tympanitic; no tumour could be found, and on examination of the rectum nothing abnormal was detected. The pulse was 76, small and compressible. There were some bronchial râles over both bases posteriorly. Shortly after admission he vomited twice, the vomited matters having a distinctly faecal odour.

I saw the patient at 8 o'clock, and ordered a large enema of warm water. Whilst this was being injected I auscultated the colon and cæcum, and distinctly traced the fluid as far as the right iliac fossa; beyond this point no gurgling was audible. On removing the enema tube the greater part of the fluid regurgitated unchanged. After a consultation with Mr. Hulke it was decided to open the peritoneal cavity at once, and search for the obstruction. Ether having been administered, Mr. Hulke made an incision from an inch below the umbilicus downwards to within about two inches of the pubes, and exposed some dilated and rather congested coils of small intestine. The finger was passed into the abdomen, and the open inguinal canals carefully examined, and found to be empty. The site of the obstruction could not be ascertained. From the pelvis a collapsed portion of the ileum was withdrawn, and whilst the distended bowels were prevented from escaping Mr. Hulke proceeded to examine the collapsed portion piece by piece, a single loop only of bowel being exposed at a time. Very soon some coils were found adherent to each other, forming continuous V-shaped curves, like a "cracker;" their peritoneal covering was thickened, the result of the old limited peritonitis. As the bowel beyond was still collapsed this was clearly not the site of the obstruction, and the examination was continued. A little further on a sense of resistance was felt; this was overcome by moderately firm traction, and immediately a marked change was noticed in the appearance of the bowel. Instead of being pale, contracted, and empty, it was now distended, of a rather dark purple colour, and contained air and fluid. A narrow ring of deeper congestion was also noticed, and about eighteen inches further the bowel presented a similar appearance. As we now felt confident that the obstruction had been relieved, probably by the untwisting of a volvulus, it was decided to cease any further examination. The abdominal wound was closed by sutures, and a pad placed over each hernial opening. After the patient had been in

bed about a quarter of an hour, there was a return of faecal vomiting. Half a grain of extract of opium was given by the mouth, and he was ordered an ounce of brandy in iced water immediately, and to have ice to suck at intervals. At 12.30 a.m. he again vomited faecal matter. A hypodermic injection of one-sixth of a grain of morphia was administered. At 9 p.m. there was a slight return of the vomiting, but it had lost its faecal character; he had slept at intervals during the night. He had no pain, and said he felt comfortable. The morphia injection was repeated, and he was ordered a mixture containing bicarbonate of soda, dilute hydrocyanic acid, and infusion of calumba; and a teaspoonful of brandy in iced water every three hours. He was kept during the day partially under the influence of morphia, and there was no return of the vomiting until midnight, when he was slightly sick after taking some brandy in milk and limewater. On the following morning (9th) it was noted that he had passed a good night, and had not vomited. The pulse was 96, full, and firm; the tongue was moist and furred; he said he felt much stronger. He vomited again at 10 a.m., but the vomit was not faecal. He was ordered half an ounce of iced champagne every quarter of an hour, and Brand's essence frequently. Nutrient suppositories had been administered every four hours since the previous evening. At 4 p.m. he passed a copious semi-pultaceous motion, only slightly coloured with bile, and subsequently two similar-looking stools. About 5 a.m. on the morning of the 10th he became much collapsed; wandered, refused food; and gradually sank at 12.45 p.m.

At the post-mortem examination the abdomen was moderately distended, and the edges of the incision were united by plastic exudation. There was no peritonitis. A portion of the ileum, eighteen inches in length, situated about two feet from the ileo-caecal orifice, was somewhat congested and slightly diseased; the peritoneal coat was smooth and shiny. The whole mesentery was very long, measuring from seven inches to eight and a half from the spine to its attachment to the intestine. There were some pleural adhesions on both sides, and over the right lower lobe there was a little recent lymph. The lungs were crepitant, except the right lower lobe, which was completely consolidated, and in a condition of red hepatisation. There was an excess of subpericardial fat over the right ventricle; the left ventricle was dilated, the muscular tissue soft and slightly fatty; there were some deposits of

fat beneath the endocardium. The kidneys were congested, but otherwise normal.

*Remarks.*—One object which I have in view in bringing this case before the Society is to draw attention to some points in the treatment of certain cases of intestinal obstruction which I think of great importance. The first is the auscultation of the colon and cæcum during the administration of an enema. This should never be omitted, as it often affords valuable information as to the site or the obstruction and so to some degree indicates the line of treatment to be followed. If during the injection the fluid can be distinctly heard gurgling in the cæcum, it may be considered almost certain that the obstruction is in the small intestine. If the flow of fluid is stopped at some intermediate point in the colon, it is very probable that the obstruction is situated at that spot, but the indication is not so certain, as a case is recorded in which fluid injected into the rectum flowed out as fast as it was poured in, and this being taken as an indication that the sigmoid flexure was the site of the obstruction, colotomy was performed in the left loin. On the patient's death from continuance of the obstruction, its site was found to be the small intestine. A possible fallacy in this test is that the movement of fluid in the bowel beyond the obstruction, owing to increased peristalsis, may be mistaken for the gurgling sound produced by the fluid injected. In the last four cases of obstruction, however, which I have met with, and have seen this test used, it has given trustworthy indications. I have lately repeated the experiments on the cadaver made by A. Hall in 1846, and by others since, with the view of testing the competency of the ileo-cæcal valve, and find that on injecting water into the colon its passage into the ileum is arrested at the valve, and that the greater the tension of the fluid in the cæcum the more closely are the edges of the valve approximated. In one experiment some air passed through the orifice; this is probably due to the fact that in the cadaver the normal tonicity of the sphincter is lost. I think there can be no doubt that the ileo-cæcal valve in the living body under normal conditions does effectually prevent the passage of fluid or air from the cæcum to the ileum. I am aware that cases are recorded tending to prove that as the result of an anti-peristaltic action fluid and solid materials injected or placed in the rectum have passed the ileo-cæcal valve; but even if this be so, it does not follow that any mechanical effect can be produced on the interior of the small intes-

tine by rectal injections. If therefore the obstruction appears to be in the small intestine, it is useless to persevere with enemata, the only effect they might possibly produce being an increased peristalsis in the lower portion of the ileum, and all authorities agreeing that one object of treatment in intestinal obstruction is to diminish as much as possible the excessive peristalsis. If, however, the obstruction appear to be in the colon, there is a fair chance that it may give way before the continued use of warm enemata, or inflation of the bowel with air. Under almost all circumstances it is advisable to get the patient partially under the influence of morphia without delay, thereby checking the vomiting and peristalsis, relieving the pain, and warding off the onset of collapse.

There is some danger that the comparative calm thus induced may tempt us to postpone those operative measures by which alone in many cases the patient can be permanently relieved. This remark applies especially to cases of acute internal strangulation of the small intestine, which are extremely fatal. I have a strong conviction that this mortality might be diminished if resort were had to the operation of abdominal section before the patient's strength has been exhausted by constant vomiting. On looking back at this case, one's only regret is that the operation was not performed earlier; had it been, it is quite possible that a life might have been saved. In this, as in so many similar cases seen in hospital practice, valuable time had been lost before the patient's admission, the result being that although the operation was completely successful in relieving the obstruction, and was not followed by peritonitis, the patient sank from exhaustion. Speaking generally, the results of this operation cannot be said so far to have been very encouraging, but still a fair number of successful cases are on record, and the number is steadily increasing. The danger of the operation in my opinion arises chiefly from the manipulation of the distended intestines; this in the most careful hands is very liable to produce partial or complete rupture, an accident which in my own limited experience has happened three times to distinguished surgeons.

So far as I have observed, the operation is usually performed in the following way:—The peritoneal cavity having been opened by an incision of the required length in the linea alba, between the umbilicus and the pubes, the forefinger is passed in and careful search made for the cause of the obstruction. If this cannot be

found, the operator proceeds to examine the whole length of the bowel, beginning with the portion of small intestine presenting at the incision; with one hand he withdraws a further portion and with the other returns the part already examined. Unfortunately there is no means of telling whether the bowel is being examined in the direction of the duodenum or of the cæcum. At one operation which I witnessed, after about fifteen feet of intestine had been examined, the duodenum was reached, when it became necessary to reverse and repeat the whole process. This done, it was evident that had the bowel been examined in the opposite direction the obstruction would have been reached almost immediately, an unfortunate, but under the usual mode of operation unavoidable, occurrence which prolonged the operation by nearly half an hour. It is obvious that such an amount of exposure and handling of the intestines as this method involves must greatly increase the risk of peritonitis and rupture. And beside the danger from peritonitis, rupture of the bowel, and shock of a prolonged operation thus entailed, there is, I believe, another risk, less serious, but still to be avoided if possible. It is this. Let us suppose the examination of the intestine to have been commenced at some point between the obstruction situated in the small intestine and the duodenum, and continued in the direction of the latter. As the successive portions of bowel are withdrawn, the contents are gradually carried onwards to the pylorus, and regurgitate into the stomach, where their presence must add to the already existing depression, and diminish the chances of recovery. In the case to which I have just alluded, where death occurred soon after the operation and without any recurrence of vomiting, the stomach was found to contain more than two pints of fluid, which had evidently regurgitated from the intestine, possibly in the manner I have just described. In the performance of the operation of laparotomy, it should, I think, be laid down as an absolute rule that the distended bowel is only to be manipulated in case the surgeon after a most careful search is unable to find any contracted bowel; and I am not quite sure whether in such a case the patient's chance of recovery would not be almost as good if the operation were abandoned and full doses of morphia administered.

There are many advantages in dealing with the collapsed bowel only; one is that it can be examined with much greater ease and in far less time than it takes to overlook an equal length of distended

intestine ; another is that if a considerable length be exposed at one time there is no difficulty in returning it into the abdomen. There is no more painful sight than that of a surgeon struggling with a mass of intestines which, in spite of all care, have slipped out of the abdomen and refuse to return ; as fast as one portion is replaced another escapes, and in the end he may be considered fortunate if the bowel does not rupture, or if he is not compelled to puncture to allow the gas to escape ; a proceeding which, although considered by some to be entirely without danger, had much better be avoided, if possible. Another advantage of this method is that the collapsed intestine never leads to the duodenum ; and, most important of all, there is much less risk of peritonitis resulting from exposure and handling of the collapsed bowel.

If, then, there be advantages in dealing with the collapsed bowel only, it becomes of great importance to know where it is likely to be found. The distended abdomen is tympanitic, and when it is opened distended bowel is always seen on the surface. This is only what might be expected : the air-containing portion naturally rises to the surface.

In making post-mortem examinations I have been struck with the fact that if the upper portion of the small intestine be distended, the lower and collapsed part of the ileum is nearly always seen lying in the pelvis. I believe that the same condition obtains in strangulation of the small intestine, and *that the collapsed portion of the bowel, which it is of so much importance to secure, will in these cases be found in the pelvis, and may be most easily reached towards the right side.* I ventured to suggest to Mr. Hulke before he commenced the operation that he would probably find the collapsed bowel in the pelvis, and on passing his finger deeply down he at once brought out a portion of the lower contracted end of the ileum. I have not been able to find any record that attention has already been drawn to the point. The explanation I believe is that during the violent and continued peristalsis and gradual distension of the bowel above the obstruction, the smaller and less active portion of bowel below, after expelling its contents, is forced downwards into the pelvis, whilst the distended, and therefore specifically lighter, portions rise to the surface. The pelvis also is too small to hold a distended loop. Another point to which I should like to call attention is that in cases of internal strangulation from bands care should be taken to make sure that the band divided is the cause of the obstruction, and that

there is not another present in the immediate neighbourhood, which, if not assisting in the present, is at any rate a possible source of future trouble. I have lately met with two cases where at the autopsy a second band was found close to the divided one. I do not, however, think that the possible existence of a second band is of sufficient importance to justify any handling of the distended bowel when the immediate cause of the obstruction has been ascertained. It is not possible within the limits of this paper to discuss thoroughly the diagnosis and treatment of the different conditions which may give rise to intestinal obstruction. The various rules for distinguishing between obstruction of the large and small intestine are well known, but a very limited clinical experience is sufficient to teach one that cases are met with which transgress all rules and almost defy diagnosis, both regional and pathological. I have contented myself with drawing attention to a few points which appear to be important.

The PRESIDENT did not think a small incision in the abdominal wall a wise practice, and quoted a case of his in favour of early interference.

Mr. BRYANT trusted that in the future surgical aid would be invoked at an earlier period than is now customary. A volvulus was equivalent to an internal hernia, and should be subjected to the same surgical rules of early operation. Injections as a means of diagnosis were applicable only in a small proportion of cases; and as a method of treatment, in intussusception excepted, they were of very little use. His own experience showed them to be harmful, sometimes causing rupture of bowel and fatal collapse. He nevertheless thought that Dr. Fowler's method of diagnosis in this case was ingenious and trustworthy, and in early stages might have good results. He approved the author's criticisms of the operation, and argued that the collapsed intestine should be sought for on the right side of the brim of the pelvis. He reiterated his belief in the danger of puncture of distended bowel, for he had seen faecal extravasation follow puncture in three cases.

Mr. EDMUND OWEN compared the nature of acute internal obstruction to that kind of external hernia in which a little knuckle of small intestine was tightly strangulated; these were the very cases in which a cutting operation was urgently required. The chief signs of the acute obstruction were umbilical pain, sickness, and collapse. The co-existence of alvine evacuations was of no material import. Copious injections should not be employed with a view to overcoming acute obstruction.

Dr. COUPLAND thought that operative interference was often postponed on account of the late stage at which cases were sent into hospital. In one case of his, after operative interference had been invoked, spontaneous relief occurred before the surgeon arrived. He had never yet seen recovery after operation in acute internal obstruction.

Dr. GREEN considered that the question of operation rested on diagnosis. If a physician were satisfied of obstruction in the small intestine, he should not hesitate to invoke surgical interference. Was

it possible to distinguish between simple volvulus and serious obstruction?

Mr. WALSHAM agreed with Dr. Green on the difficulty of exact diagnosis, and the desirability of some better rule on the subject. The diagnosis between obstruction in the large and small intestine was not quite satisfactory, and he thought Dr. Fowler's plan would prove of value. He also recommended the insertion of the hand into the rectum, which, if practised with proper precaution, involved no risk. He thought it possible to tell the direction of the exposed intestine from noting the direction of the mesentery. He had succeeded in returning coils of intestine into the abdomen by making firm pressure with a sponge on the whole mass.

Dr. FOWLER replied, and stated that it was impossible to distinguish between those cases of volvulus which would untwist spontaneously and those which would not.

## ABDOMINAL PULSATION.

By ALFRED WILTSHERE, M.D.

DR. WILTSHERE pointed out that abdominal pulsation of an abnormal kind occurs in males as well as in females, but more frequently in the latter. In males it may arise from various causes, but aneurism is much more probable than in females. It very rarely occurs in girls or young women before child-bearing, and when it does usually arises from impoverished blood, but may be due to tumours, malignant or benign, or to cardiac disease. It becomes more common towards the change of life and afterwards, and may then arise from various causes, which may be grouped as follows:—  
*Affections of the vascular system:* (1) Cardiac lesions—e. g. aortic regurgitation; (2) arterial lesions—degenerative changes, such as calcification, atheroma, &c., sometimes secondary to renal disease, aneurism, vaso-motor neuroses, peripheral spasm, pressure on the aorta or its branches by tumours of various kinds, faeces, abscesses, effusions; (3) blood changes—anæmia, hydramia, chlorosis, deficiency of albumen, or various cachectic blood-states arising from excessive loss or otherwise.  
*Extra-vascular affections:* Pulsatile tumours of the liver, spleen, stomach, omentum, mesentery, kidneys, intestinal tract, or other tissues in the abdominal cavity, notably if malignant; tumours lying over the aorta, as horse-shoe kidney, moveable kidneys, the pancreas, purulent collections, hydatids, sarcomata, faecal collections, mesenteric cysts; neurotic affections, as from fright, anxiety, grief, shock, disappointment; Addison's

disease; climacteric disorder, nervous and vascular, accompanying catamenial suppression. *Diagnosis*: Careful physical examination of the abdomen, pelvis, and thorax. Inquiry into the general state, particularly of the blood. *Treatment*: Dependent upon the cause, to discover which no effort is to be spared. Vascular sedatives generally helpful, as potassium iodide, the bromides, &c. Blood impoverishment to be amended by iron and liberal diet. Laxatives useful—*e.g.* an ounce of the compound decoction of aloes and five grains of iodide of potassium, three times a day.

The PRESIDENT had found good results from the use of laxatives.

Dr. THOROWGOOD had seen a remarkable case related by the author, which had been under observation for many years. He could testify to the good effect of iodide of potassium in that case.

Dr. GREEN had seen good effects from bromide of potassium and iron. He thought only the "neurotic" form of pulsation was unaccompanied by distinct symptoms.

Dr. EWART had lately under his care a man, aged thirty-five, in whom abdominal pulsation of this kind occurred. The patient was dyspeptic, and had not noticed the pulsation till his medical attendant discovered it; but from that time had imagined various symptoms in connection with it.

Dr. OWEN had also seen a case of the kind in a male subject.

Dr. WILTSHIRE briefly replied. He had seen cases illustrating all the varieties of pulsation mentioned in his paper. Many of the patients were dyspeptic and suffered from constipation. He had seen the pulsation accompany aortic incompetence and Bright's disease.

*January 29th, 1883.*

#### ACUTE TUBERCULOSIS COMPLICATED BY ALBUMINURIA: UNUSUALLY LOW TEMPERATURE: ABSENCE OF MARKED PHYSICAL SIGNS OF CONSOLIDATION OF THE LUNG: PRESENCE OF BACILLI IN THE SPUTA.\*

By THOS. WHIPHAM, M.A., M.B., Oxon.

CORNELIUS HANLON, a light porter, *st. 19*, was admitted into St. George's Hospital under my care on October 10th, 1882.

His father at that time was also an in-patient with symptoms of phthisis. There was no other heritable disease in the family.

\* Introducing a debate on the Relation of Bacilli to Tuberculosis.

The patient's account of himself was that he had always been perfectly well until six weeks ago, his only other recollection of illness being of measles some years previously. He had been subject to "bad colds," and had occasionally suffered from sorethroat; he had, however, been free from the latter for the last four years, but during the last attack of cough and sorethroat he had spat up a few mouthfuls of blood, and he described a feeling he experienced at the time "as if there had been something in the left lung which came away suddenly." There had been no haemoptysis since. Five years previously he had an ulcer on the right leg, for which he could assign no cause; the scar was visible on his admission.

There was no history of syphilis or rheumatism, or, till lately, of irregularity of the bowels. He had not noticed any change in his urine.

Six weeks before admission he "caught a slight cold," his legs began to swell, and after a fortnight had elapsed, diarrhoea set in, frequently attended by abdominal pain. For the past two or three weeks he had been troubled by cough in the morning, but there had been scarcely any expectoration. There was no history of night sweats. His appetite had been always fairly good; still he had lost much flesh of late.

On admission, the patient was found to be a tall, gaunt lad; both legs were oedematous, and he stated distinctly that the swelling was always greater at night, and that they had been much more swollen than at the time at which he came under observation. He had a cough, but it was not troublesome. The lung sounds were normal; there was a slight reduplication of the first sound of the heart; the liver and spleen appeared to be normal in size. The tongue was red, and rather dry in the median line.

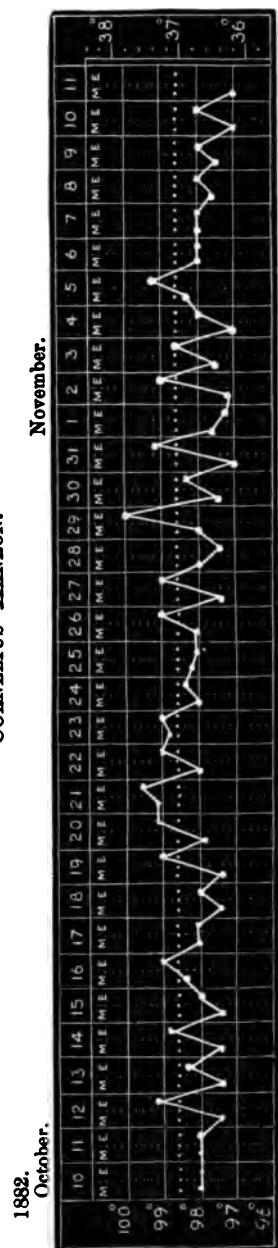
He was ordered a mixture of Potass. Acet., Sp. Æther. Nitr., and Decoct. Scopar., with fluid diet. By the next day his bowels had acted five or six times; the urine was pale, acid, of a sp. gr. of 1024, and contained a very large quantity of albumen. Some of this urine was examined on October 12th and found to contain granular and hyaline casts, but not in any great number.

On October 16th the urine was almost solid with albumen on boiling; the bowels acted three or four times daily; the cough was much as on admission, and there was a little glairy bronchial expectoration. Evening temperature 99°. Three days later the boy seemed somewhat improved, although the diarrhoea continued. His diet was

changed to fish, with a light pudding, milk, and beef tea. The urine on the 21st was still nearly solid with albumen. The sputa were more viscid. Evening temperature 99° 6'. The thirst, of which he complained from the beginning, was unabated, and as the diarrhoea was still profuse the medicine was changed as follows: Acid. Sulph. Dil.  $\eta$ xx, Tr. Opii  $\eta$ v, Decoct. Hæmatoxyli  $\mathfrak{z}$ iss, 4tâ quâque horâ. This, however, had no good effect; the patient growing weaker and losing flesh rapidly. The mixture was changed to Tr. Opii  $\eta$ v, Mist. Cretæ  $\mathfrak{z}$ iss. 24th.—He complained of occasional pain in the chest, which lasted about ten minutes; the feeling was, according to his description, as of a weight in the front of his chest, which produced slight difficulty of breathing. An examination was made next day; but beyond slight increase of vocal resonance under both clavicles (which was attributed to the thinness of the thoracic walls), nothing unusual was discovered. The urine still remained all but solid with albumen. His appetite was now defective, and it was necessary to omit the fish from his diet. The diarrhoea was unchecked. 28th.—Another examination of the chest was made. A few rhonchi were audible over the back of the apex of the left lung, but they cleared up when the patient coughed. Expansion was good, and no dulness could be made out in front of the chest; but the vocal resonance under the right clavicle seemed rather increased. The back of the right apex too was rather dull. With the view of checking the diarrhoea, ten grains of Dover's powder and three grains of Hydrarg. c. Cret. were ordered, and the patient was allowed five ounces of brandy daily.

In spite of the free administration of chalk and Dover's powder the diarrhoea persisted to a great extent, and on November 1st returned in full force. The right lung at this date was somewhat dull in the supra- and infra-clavicular regions; inspiration was deficient, vocal resonance was increased, and a few crackling sounds were audible. The sputa were slightly streaked with blood. The following mixture was ordered; Carbon. Ligni 3ss., Bismuth. Subnit. 3j, Tinct. Hyoscyam. 3j, Acid. Hydrocyan. Dil.  $\eta$ v, Sod. Bicarb. gr. xv, Aq. ad  $\mathfrak{z}$ j, 4tâ quâque horâ. Next day the diarrhoea had been checked, the bowels having acted only three times in the twenty-four hours. The crackling sounds in the right apex had cleared up. The evening temperature rose to 100°, the highest point recorded whilst under observation.

On Nov. 3rd the sputa were very viscid and somewhat rusty. On



the 4th crackling sounds were again audible above and below the right clavicle, and similar sounds were detected over the left apex. The patient felt rather better, and was allowed fish diet, with mutton broth and milk. Nov. 7th.—The dulness (which was not absolute) had extended down the right lung, but there was no increase of cough; the urine contained rather less albumen, *i.e.* it was not so nearly solid. The diarrhoea being again profuse a mixture of the tinctures of kino, catechu, and opium were ordered in decoction of hæmatoxylon. In addition to the brandy three ounces of port wine were prescribed.

Examination of the chest on the next day gave the following results: after cough one or two very fine moist sounds were heard under the left clavicle; no moist sounds were audible on the right side. The left upper lobe was slightly dull anteriorly; the right posteriorly.

No moist sounds could be detected on either side posteriorly; respiration was, however, loud, but not particularly harsh, on both sides: not more so, perhaps, than in the chests of emaciated persons. The sputa were slightly streaked with blood. The liver dulness extended to within two inches of the level of the umbilicus; there was no perceptible enlargement of the spleen. Four additional ounces of port wine were ordered.

Nov. 9th.—A portion of the sputa was prepared and stained after the manner suggested by Dr. Heneage Gibbes, and bacilli of tubercle were clearly demonstrated. As, however, the sputa from which this specimen was taken had been lying for several hours in the receptacle, it was thought that herein might be a source of error; so the next day the patient was directed by my clinical clerk, Mr. G. A. Bolton, to spit into a small vessel in his presence. This was at once removed from the ward, the sputum prepared and stained in a similar manner, and the bacilli were found as before.

Between this and the date of the patient's death (Nov. 14th) the diarrhoea was profuse and exhausting; in spite of the use of acetate of lead, opium, catechu, hæmatoxylon, and starch enemata. The patient did not complain of any abdominal pain, nor was there any marked tenderness on pressure. The temperature ranged between 97° and 100°. The former degree was recorded on five occasions, viz., the mornings of October 31st and November 2nd, 4th, 10th, and 11th; whilst on several other mornings it did not exceed 97·5°.

*Autopsy, twenty-six hours after death.*—The body was extremely

emaciated. On opening the thorax the lungs were found to be firmly bound down by old pleural adhesions; they were much congested; at the back of the apex of the right lung was a recent vomica, capable of holding a walnut. The upper lobes of both were simply studded with miliary tubercles in various stages of softening. The lower parts of the lungs were studded with miliary tubercles, but in these situations softening had not begun. The heart was small, 8 oz. The liver weighed 3 lbs. 6 oz., and was fatty and somewhat transparent in appearance, but gave no lardaceous reaction with iodine. The spleen weighed 9 oz. and was highly lardaceous. The kidneys were similarly diseased; they weighed 14 oz.

Tubercular ulcers were found throughout the small intestine and in the large bowel for a distance of about ten inches from the ilio-cæcal valves; the mucous membrane had been totally destroyed by tubercular ulceration.

It was thought that this case might prove interesting to the Society for three reasons.

1st. On account of the remarkably low temperature which prevailed for thirty-two days in a person suffering from acute tuberculosis. In a paper read before the Royal Medical and Chirurgical Society in March, 1882, Dr. C. Theodore Williams drew especial attention to the influence of albuminuria on the temperature in cases of phthisis, and gave sixteen cases which showed a remarkably low daily temperature when the two diseases were coexistent. He compared these sixteen cases with the temperatures of forty-three similar cases free from albuminuria, showing that "while the course under ordinary circumstances would be highly pyrexial, in the albuminuric cases it is subfebrile." In the present case, on nineteen out of the thirty-two days on which morning and evening observations were made, the temperature was subnormal; on fourteen days only was the temperature above 98.4° F., on six days only did it exceed 99° F., and only on one evening did it reach 100° F. Dr. Williams, quoting the experiments of Hammond, Stolnikow, and others, explains the absence of the symptoms of uræmic poisoning, which would naturally be expected when the urine becomes solid on the application of heat, by the excretory influence of the diarrhoea. The case related seems to confirm this observation.

2nd. A remarkable point in this case is the absence of marked physical signs of so much consolidation as was revealed by the post-

mortem examination. The patient during his residence in hospital was examined by many accomplished stethoscopists, and to none of them was there any evidence of such extensive consolidation. Further, the existence of the vomica at the right apex was unknown until the time of the autopsy. A possible explanation of this fact may be that the bronchial tube or tubes communicating with the cavity were occluded owing to the solidification of the pulmonary tissue.

3rd. The clinical features of the case pointed to tuberculosis, yet the physical signs were to a great extent wanting. The fact, however, that acute tuberculosis of the lung frequently does not admit of stethoscopic demonstration was duly taken into consideration. It was suggested by Dr. F. W. Hewitt, my house physician, that the sputa should be microscopically examined for the presence of the bacilli of tubercle. This investigation was performed by Mr. F. C. Compton and Mr. G. A. Bolton, using the method of staining recommended by Dr. Heneage Gibbes, with the result narrated; and the discovery of bacilli in the presence of such negative stethoscopic evidence, constitutes not the least interesting feature in this case.

The above notes I considered of sufficient interest to be brought under the notice of the Medical Society. My friend the surgical secretary, however, was of opinion that from it might profitably arise a discussion on the clinical aspects of the recent discovery of Koch—the bacillus of tubercle. He urged me, therefore, to bring before you to-night any additional facts which might have come under my notice, with regard to the value of these organisms in the diagnosis, &c., of tubercle.

I feel, however, that I owe to the Society an apology for my presumption in having acceded to his request that this case should be made a basis of discussion, for the simple reason that my additional facts are meagre—very meagre probably—in comparison with those of many here present this evening. I crave, therefore, the indulgence of the Society on my necessarily many shortcomings.

The pathological significance of the question has been ably dealt with by Koch in the first place, by Erlich and Baumgarten in Germany, by Heneage Gibbes and Heron in this country. The result of their labours is to show that in tubercle certain organisms are present, which resist the action of dyes (such as Spiller's purple) by which putrefactive bacteria are stained, and require for their demonstration certain special treatment by which the latter are unaffected,

and that the bacilli of tubercle are smaller than the ordinary bacteria of putrefaction.

The clinical significance of these bacilli would naturally be estimated by their presence in the sputa of persons afflicted with phthisis, and by their absence in the expectoration of persons suffering from other diseases of the respiratory organs.

Due consideration of the methods which have been suggested by different observers leads one to the conclusion that the process advocated by Dr. Heneage Gibbes is the most satisfactory. In my own observations, therefore, I have adopted his plan and have treated the sputa, which had been previously dried on a cover-glass, with a solution of magenta and pure aniline in order to stain the bacilli, removing the colour of the specimen thus stained from all structures other than the bacilli with dilute nitric acid, and then staining the ground work with a saturated solution of chrysoidin, and finally mounting in Canada balsam.

The first question I set myself in the two or three weeks which I have been able to devote partially to this subject was :

Can these organisms, known as the bacilli of tubercle, be demonstrated in the expectoration or other morbid secretions of persons who are presumably not suffering from phthisis ?

2nd. Are they always demonstrable in cases of phthisis ; and if so, to what extent do they assist diagnosis or indicate the progress or arrest of the disease ?

With a view of endeavouring to answer these two questions, I carefully examined as they were admitted into hospital some twenty cases, of which the following is an epitome :

The first case I shall give somewhat in detail ; as the detection of the bacilli was of material assistance in confirming the diagnosis of phthisis.

1. A man, aged forty-two, who had for some time been acting as dead-house porter at the hospital, was admitted on November 20th, 1882, with symptoms of acute laryngitis, which had come on a week or two previously after a bad cold. Two days before his admission he had increased his cold, and the throat affection thereupon became rapidly worse. He had up to the time of the first catarrhal attack enjoyed good health.

On admission he complained of soreness of the throat and windpipe, and was very hoarse; there was much swelling of the parts above the vocal cords, and these cords themselves were of a brilliant red colour. The lungs were in some degree emphysematous, but beyond that no definite lesion was discovered. Under treatment the acute inflammation subsided to a great extent, but the swelling of the arytenoid cartilages

and epiglottis gradually increased. The diagnosis was laryngeal phthisis, and any changes in the lungs were anxiously expected. On Dec. 14th, 1882, the expectoration was examined by the method above described, and the bacilli of tubercle were found in considerable numbers. With these facts before us the lungs were frequently examined, but, although the patient showed other symptoms of phthisis, it was not until January 3rd, 1883, that the physical signs of pulmonary disease, viz., crackling sounds at the back of the right apex, were discovered. The patient left hospital on January 27th, 1883, the expectoration having ceased for some weeks previously, but there still remained crackling at the right apex; and his temperature was unsteady.

2. Towards the end of December, 1882, a child of three was admitted with diphtheria; in the course of a few hours it was found necessary to perform laryngo-tracheotomy. Shortly after the operation a portion of the false membrane was expelled through the tube, and was immediately immersed in spirit. Sections of this membrane were made and stained with magenta and chrysoidin, but no bacilli were found.

3. On the fourth day of an attack of pneumonia, a man of twenty was admitted under Dr. Cavafy. The sputa were scanty, but in all respects characteristic of the disease. The man's temperature reached 105° F. Next day specimens of the expectoration were examined, but no bacilli were present. The sputa of this patient were again examined six days later, when they had lost their viscosity and rusty colour, and had become purulent; with a like result.

4. The sputa of a woman, aged forty-one, were examined. She was the subject of bronchitis and glycosuria, with emphysema of the lungs. She had been subject to winter-cough with copious expectoration for many years. She was of florid complexion, and stout, but stated that she had lost much flesh of late.

The specimens examined contained no bacilli.

The patient left hospital in the course of a few weeks much improved in health.

5. Early in December, 1882, a domestic servant, aged thirty-eight, was admitted under my care. She had suffered from winter-cough for some years; her present attack commenced three days before her admission. She was suffering severely at the time from bronchitis in emphysematous lungs. The expectoration was abundant and purulent, but contained no bacilli.

6. The abundant purulent expectoration of a woman, aged forty-six, who had been for some time in hospital under Dr. Ewart, was examined on two occasions, viz. on Christmas day, 1882, and again on January 8th, 1883, but no bacilli were found. This patient was improving under treatment, although she had extensive chronic disease of both lungs. The symptoms dated back two years and a half, and on one or two occasions she had had severe haemoptysis. The temperature was raised and irregular.

7. On December 19th, 1882, a potman, aged thirty, was admitted under my care with fluid in his left pleural cavity and consolidation of the lung, over which creaky sounds and crackling were audible. The man stated that he had been quite well until six weeks before his admission, when he caught a severe cold. He subsequently had night sweats, lost flesh, and occasionally spat blood. There was no family history of lung disease. On Christmas day, 1882, the sputum was examined and found to contain a few bacilli. By this time it should

be noted the patient had improved greatly. Early in January, 1883, expectoration ceased, and no creaking or other sounds were audible. Respiration however remained far from natural, and the temperature continued to be irregular up to January 29th, 1883.

8. On Christmas day, 1882, was examined the sputum of a man, aged forty-seven, who had been for a short time in hospital under Dr. Wadham. This history of his ailment was that of a bronchitis, which had commenced in the winter of 1879-80 when the snow was about. Of late the patient had lost much flesh and had suffered to a certain extent from night sweats. There was, however, no consolidation of the lungs, but the symptoms pointed perhaps to phthisis. The sputa were examined on three occasions: on Christmas day, 1882, and on January 1st, 1883, they were free from bacilli; but on January 8th following, one or two bacilli were found.

9. On December 28th, 1882, a man of twenty-three came to hospital as a casualty patient, having suffered from cough for a month, and from haemoptysis four days before. He presented all the symptoms and signs of advanced phthisis, e. g. consolidation of the lungs and crackling at the right apex. The sputum obtained while he was in the waiting-room was stained and examined at once, but no bacilli could be found.

10. At the end of December, 1882, a man of twenty was admitted under Dr. Wadham with evident signs of phthisis (dulness and crackling) in his left lung, with night sweats and haemoptysis. The symptoms were of recent date, and the lad so rapidly improved that in a few days expectoration had entirely ceased; and he left hospital early in January. On the one occasion on which there was an opportunity of examining the sputa a few bacilli were found.

11. A woman, aged sixty-one, was admitted into hospital on December, 1882, with a very severe attack of pemphigus of fourteen days' duration. Some of the bullæ, which were extremely large, contained clear fluid, others were purulent; both were examined, but no bacilli were found.

12. A man of forty was admitted at the end of December, 1882, with slight rheumatism, and some bronchitis with purulent expectoration. After he had been in hospital a few days he spat up on one occasion some blood. He had no symptoms or signs of phthisis. The sputa contained no bacilli.

13. The sputa of a man, aged forty, who had been in hospital under Dr. Ewart's care since October 20th, 1882, on account of chronic phthisis, were examined on January 8th, 1883. Bacilli were found, but not in great numbers. The patient was improving and gaining weight.

14. The sputa of a man, aged sixty-three, who had also been in hospital under Dr. Ewart for chronic phthisis since September 19th, 1882, were examined on January 8th, 1883, when a few bacilli were found. This patient was also improving and gaining weight under treatment.

15. A man, aged thirty, was admitted on January 11th, 1883, in a dying condition. He had had haemoptysis ten years previously, but until quite recently the disease had been arrested. Both lungs were extensively diseased, as shown by the physical signs during life, and were found at the autopsy full of miliary tubercles in all stages, with vomica at the apices.

In the sputa, during life, bacilli were found; but not in great numbers; but in the contents of a vomica, which was found at the post-mortem

examination quite full, the bacilli were present in abundance. Sections through the walls of a vomica found at the right apex were made, and stained with magenta and chysoidin. The microscopic appearances were chiefly of fibrous tissue containing irregularly-shaped masses of black pigment. Here and there could be seen a shape resembling that of a bacillus, but the presence even of so few bacilli could not be affirmed with certainty.

The following five specimens Dr. Isambard Owen was kind enough to procure for me from the Brompton Hospital, and I have to thank Mr. Horrocks, the clinical assistant, for collecting them.

16. The case was one of phthisis with a temperature of 103°, and rapidly extending disease. At the apex of one lung was a cavity. In the sputum examined, bacilli were found in great numbers.

17. Sputum from a case of chronic phthisis. Bacilli, not in great numbers.

18. Sputum from a case of advanced phthisis progressing rapidly. Bacilli found in great abundance.

19. Sputum from a case of extensive phthisis of both sides, with a temperature of 102° F. A few bacilli found.

20. Two preparations of the sputa from a case of acute exacerbation of phthisis with vomicæ. Both specimens contained bacilli in immense numbers, and in nests.

The medical publications of late have recorded the observations of several among the many who are interested in this important discovery of Koch's. I may notice first, because it contains a suggestion as to the avoidance of error in the examination of the expectoration, a letter from Dr. Eugene Prideaux, of Wellington, which appeared in the 'Lancet' of December 30th, 1882. Dr. Prideaux in this communication points out the necessity for maintaining the magenta solution at a temperature of 100° F., because in cold weather, without this precaution, the bacilli may not take the colour. Some of my earlier observations were made in the remarkably warm weather which has prevailed during this winter, when the external temperature was about 50° F., while the room in which the specimens were stained was thoroughly warmed by a gas stove. Since reading Dr. Prideaux's letter I have followed his advice. He states that the discovery of bacilli in the sputa had led him (as the sequel proved) to a correct diagnosis in cases where the symptoms were negative.

In the 'Berlin. Klin. Wochenschrift,' 1882, No. 45, Balmer and Fraentzel give an account of an examination of 120 cases of phthisis in all of which they found bacilli; in bronchitis they found none. The result of their observations is that when the bacilli are

numerous and well developed the prognosis is bad ; that the organisms are exceedingly abundant in the most acute cases of phthisis, that their number is greater when the destruction of the lung is rapidly progressing, and that the number is greatest towards the end of the disease.

From the fact of the bacilli being more numerous in the contents than in the walls of the vomicæ, Balmer and Fraentzel consider that the contents further their development better than the lung tissue.

Professor D'Espine, of Geneva ('Rev. Médicale de Suisse Romande,' December, 1882), can only partially confirm the observations of Balmer and Fraentzel, and is of opinion that from a diagnostic point of view the bacillus is valuable, but that no reliance can be placed upon it in prognosis.

In a case of miliary tuberculosis he found no bacilli, and in two cases of phthisis, one with large vomicæ and the other with high pyrexia, only two or three bacilli could be found out of a great number of preparations. He insists therefore on numerous examinations of the sputa on different days before conclusions can be drawn.

At a meeting of the Medical Officers of Health Society held on December 15th, 1882, Dr. G. A. Heron read a paper on this subject. Sixty-two cases of phthisis had come under his observation in which he had detected bacilli. The ages of the patients varied between ten and sixty-five, and they were of both sexes.

Dr. Heron's conclusions were that given the persistence for some weeks of bacilli in small numbers the case will probably run a long course ; given the persistence of a large number of bacilli in the early history of the case the disease will run a short course and end in death ; while in the cases which were most rapidly fatal the bacilli were grouped in numerous masses.

He thinks that if three or four bacilli are seen in the field of the microscope they must be considered as being few in number, and that if thirty or forty are seen they are numerous.

It is in evidence then so far that the so-called bacilli of tubercle are almost always present in the expectoration of persons who are suffering from phthisis, and that they are, so far as observations have been hitherto made, absent in bronchitis, pneumonia, &c. They cannot therefore be regarded as mere accidental inhabitants of the sputa in phthisis. My own cases confirm the statements

of others to this effect, for I found them in the majority of the cases of phthisis which I examined, and I failed to discover them in the membrane of diphtheria, and in the expectoration of acute pneumonia and of bronchitis even when attended by hæmoptysis, as in Case 12.

It is, moreover, to be noted that in the fluid from the bullæ of pemphigus (Case 11) no bacilli of tubercle were found, and this observation acquires additional importance from the fact that Balmer and Fraenzel have found them in the pus of a tubercular inflammation of the knee-joint ('Berlin. Klin. Wochensch.', 1882, No. 45), showing that the absence of the contact of atmospheric air does not prevent their development.

Those who have worked at this subject seem to be agreed that it may happen occasionally that the bacilli are absent from the sputa of those who are the subjects even of rapidly progressing phthisis. My own observations are in accordance with this view; of the sputa of Case 15 one specimen at least was entirely free from these organisms. It is possible that in such instances a source of error may exist in the fact that the particular sputum examined may have come from the pharynx or nares, and not from the lungs. It is important, therefore, that when phthisis is suspected repeated examinations of the expectoration should be made, as has been insisted upon especially by Professor D'Espine, of Geneva, and Dr. Pfeiffer, of Wiesbaden ('Berlin. Klin. Wochensch.', 1883, No. 3).

From the few observations which I have been able to make it would be unwise to draw conclusions, but a review of the cases of phthisis given above, in which bacilli were found, leads to the suggestion that in acute tuberculosis and in the exacerbation of previously existing disease (case of Hanlon, and also in Cases 1, 7, 15, 16, 18, 19, 20), where the symptoms are well marked and the temperature is high, the bacilli are numerous; that they are found in greater numbers and, I think, better developed in the cases of exacerbation than in cases of tuberculosis in the earlier stages, even when the disease is as acute as in the case which forms the subject of this communication. On the other hand, when the disease is arrested, or the patient is improving under treatment (Cases 6, 10, 13, 14), the bacilli are absent or very few in number. If these suggestions are established by the observations of others we have a most valuable aid to diagnosis and guide to treatment. At the

same time we cannot too highly estimate the caution given by Professor Jacquoud, in his recent inaugural address in Paris, against that exclusivism which would regard bacteria as all and everything in the pathology of disease.

Professor Balogh, moreover, has recently stated, when speaking before the Royal Medical Society at Buda Pesth ('Wiener Med. Wochensch.', No. 51), that he had detected in the marshes surrounding the town a bacterian resembling the bacillus of tubercle. The Professor has doubts, however, as to the identity of the two, and he thinks that neither the form nor staining is sufficient to distinguish the varieties of schizomycetes. In his experiments animals were caused to inhale the fungi of the marsh, and on post-mortem examination nodular growths were found in the lungs, heart, and kidneys; in these nodules the fungi were found, and they stained both with methylene blue and vesuvin, just as do the bacilli of tubercle. Professor Koryanyi mentioned a case, presumably of pulmonary syphilis, in which bacilli were found. He therefore considers that the presence of this particular organism is not necessarily diagnostic of tubercle.

So far the question only of the presence or absence of the bacilli in the sputa has been considered. Two equally important questions, however, viz. of the heredity and contagiousness of phthisis, receive the least elucidation from this discovery of Koch.

With regard to the latter, the difficulty in regarding it in terms of bacilli in the present state of our knowledge seems to be particularly great. In the spread of zymotic diseases such difficulties are absent. Typhus, small-pox, &c., spread usually with great rapidity from one person to another, until whole districts are involved, and these diseases are now supposed to be the result of the development of bacteria—special bacteria in the blood. Now if the bacillus of tubercle is the *fons et origo* of the malady, it is marvellous that there are no similar epidemics of phthisis, and it appears equally strange that the evidence of its contagiousness should be so slight that the very fact of its being infective should be still a matter *sub judice*.

Even supposing phthisis to be contagious, are we to presume the bacillus to be of a less active or virulent nature than the organisms which are supposed to account for other infectious diseases? Or must we say that it is only when a fitting soil for the development of the bacilli is found that tuberculosis is set up? If so, the number

of those who thus present a soil unsuited to the growth of the bacillus must be great. In the absence of some such explanation it must be assumed that these organisms lack some actively poisonous property which characterises other bacteria.

That some persons are in a mysterious manner protected against the poison of certain fevers there can, I think, be no doubt, and I may give as an instance a physician of my acquaintance who in former years when engaged in dispensary practice was actively engaged in visiting patients during an epidemic of small-pox, and who has even been inoculated with the disease, and yet never contracted it.

Further, with regard to tuberculosis I may here quote an instance given by Professor D'Espine (*loc. cit.*) of a person suffering from chronic induration of one apex, who had occupied for one year a bed next to that of a tubercular patient; and yet no bacilli were found in the sputa.

The other question, viz. that of the heredity of phthisis, presents, perhaps, still greater difficulties if we are to assume that the disease is due solely to the development of bacilli. Theoretically the organisms should produce some unknown change in the tissues of the parent which is capable of being handed down to the offspring, possibly somewhat after the manner of cancer or gout. This, however, is at present mere theory, and must be refuted or established by future observations. At present it is no more possible to advance any satisfactory explanation of the fact than before the discovery of bacilli.

The following suggestions are the outcome of the observations which have been from time to time brought under the notice of the profession.

1. That bacilli may as a rule be found in the expectoration of persons suffering from phthisis, but that even when the disease is advanced and rapidly extending repeated examinations of the sputa may be required for this demonstration.
2. That they are especially abundant in the acute form of the disease and in the exacerbation of previously existing disease.
3. That in cases where the disease is arrested or is improving under treatment they may be absent altogether.
4. That a solution of the questions of the contagiousness and heredity of phthisis is not afforded by the discovery of the bacillus of tubercle.

In conclusion, I have to thank many friends for valuable assistance rendered to me, and I would especially mention Dr. Isambard Owen, Mr. Edmund Owen, and Mr. F. C. Compton, Demonstrator of Histology at St. George's Hospital.

Dr. SEYMOUR TAYLOR remarked on the frequency with which acute tuberculosis co-existed with entire absence of the physical signs of phthisis. He believed that heredity on one side or other was common in such cases, which frequently begin with laryngeal symptoms. The low temperature might be connected with the bowel lesion, as well as with the albuminuria; for abdominal injuries in animals proved rapidly fatal from shock, and in many cases (*e. g.*, enteric fever) recovery from extensive bowel lesion was accompanied by subnormal temperatures. He asked whether bacilli had been found in tubercular subjects in other excretions than those of the respiratory tract.

Dr. SAMUEL WEST said that Koch's masterly investigation had left little to subsequent observers, save confirmation of his results; and his own observations, which he had been making for some months, were entirely confirmatory of Koch's conclusions. 1. He had found bacilli present in every case of phthisis which he had examined, though in some cases they were in such small numbers as only to be found after repeated and very careful examination. 2. He had found the number to vary, as a general rule, with the rate of breaking down of the lung, and therefore, in most cases, with the gravity of the disease. 3. The arrangement of the bacilli in the sputum varied much. At times they were isolated, few in number or many, and very numerous in rapid cases; at other times arranged in groups and masses, which appeared to be the rule in the most rapid cases. 4. In some instances the bacilli contained small bright bodies, which had been called spores, and this seemed to be a common condition in acute cases. Similar minute bright bodies were often found free in these cases. It was possible they were free spores; but upon this point there were no observations forthcoming. 5. There appeared to be but little variation in the size of the individual bacilli in different cases. 6. In cavities the bacilli existed in large numbers and usually in masses. It was remarkable that they were not found in the lung tissue to anything like the extent which would be anticipated. Two cases were referred to in which masses of extraordinary size were found in the cavities, and none at all in sections of the lung substance, although the pathological changes characteristic of chronic phthisis were well marked. This fact afforded the probable explanation of the variations in the number of bacilli in the sputum; the more cheesy matter or fluid from a cavity there was in the expectoration the more bacilli we might expect to find. Consequently, in a case of acute tuberculosis, before breaking down of the lung, we should expect to find none; and we should further look for great and irregular variations from time to time dependent solely upon the amount of cavity-fluid discharged. Dr. West advocated caution in drawing conclusions. The presence, number, and arrangement, as well as the occurrence of spores, were all facts of some value in diagnosis, indicating the kind of process which was going on in the lung; but it was not proved yet that the bacillus was the one absolute test of phthisis. As regards the questions of treatment and of contagion, there were not yet sufficient facts upon which an opinion might be based. However tempting the

theory of the contagiousness of phthisis might be in the light of these recent discoveries, clinically it was very far from being proved; indeed, clinical evidence of contagion in any ordinary sense of the term was hardly to be found. The question of the exact relation between phthisis and these bacilli could only be answered by such experiments as those which Koch had instituted; and admirable and apparently conclusive as these experiments were, they would require much confirmation before the conclusions based upon them could be unreservedly accepted.

Dr. GREEN dwelt on the necessity for many further observations. So far, those of different observers in the main agreed; and assuming the truth of these facts, there appeared to be no ground for separating phthisis into different varieties. Koch's experiments, if not refuted, established the fact that phthisis was a communicable disease, but bacilli were not the only agents in the causation of phthisis; if they were, all who were exposed to the contagion should become tuberculous, whereas all clinical experience was against phthisis being contagious. What the other agent was had yet to be ascertained. If bacilli were the only agent in producing phthisis, it was not clear why the disease should affect so markedly the apex of the lung. Perhaps the other element, whatever it might be, rendered the apex of the lung favorable for the development of bacilli; and the old view that conditions favouring blood stasis and exudation also favour the development of phthisis might still hold good. In the inheritance of phthisis, there was transmitted a general feebleness of constitution and some local weakness that laid the subject open to attacks of the disease.

Dr. BURNETT YEO said that Dr. Barrow, of Liverpool, had informed him that he had detected bacilli in the urine in a case of tuberculous kidney, and in another case in the lymphatics of the lung. His own observations coincided entirely with Dr. Whiphams' remarks, and he agreed with Dr. Green as to the evidence now at hand in favour of the unity of phthisis. The absence of bacilli was as important diagnostically as their presence; this was illustrated by a case under his care at King's College Hospital, which presented the characters of acute pulmonary and general tuberculosis, but no bacilli were found in the sputum after repeated examinations. The patient died, and the lesions of typhoid fever were found with concomitant bronchitis, but no trace of tubercle. In another case of empyema communicating with the lung no bacilli were found in the pus withdrawn from the pleura, nor in that expectorated. There could be no doubt that the bacillus was one of the agents in phthisis, and as to the contagiousness of that disease, it was a subject which required investigation. He was quite surprised at the large number of affirmative replies that had been received from practitioners to the circular lately issued by the Collective Investigation Committee of the British Medical Association. Upon this question depended points of great practical importance, as in a case recently under his notice, of an applicant for life insurance, three of whose sisters had died of phthisis; yet the man in question was in good health, and not one other of his relatives suffered from phthisis. The inference was that the three sisters had acquired the disease. He did not consider that the bronchi were always the channel of entrance for the bacilli, and instanced the fact of the pulmonary disease arising secondarily to intestinal tuberculosis.

Dr. RICHARDSON hoped that the discussion would place the present position of the question plainly before the public and the profession.

He thought that exact information was needed as to the way in which germs were supposed to be developed and reproduced; also as to the chemical and physical characteristics of germs and bacilli, upon which he had as yet heard little said. In an experience of over 3000 cases of phthisis he had endeavoured to arrive at conclusions respecting its mode of origin. There was, first, a well-marked peculiarity of physical organisation; secondly, certain nervous and mental peculiarities; thirdly, he had found a history of exposure to cold in a large majority of cases. In one case he was in the company of the patient, and was exposed to the same chill that started in her an illness which rapidly assumed the character of phthisis and ended fatally. He showed a series of drawings of lungs from animals killed by nitrite of amyl. The earliest condition was one of striking pallor; a later state was that of intense congestion with haemorrhages, the apices of the lungs being always affected; whilst in cases where the animals had recovered from the immediate effects, and had been killed later, actual excavation was found. Here were changes not unlike those of phthisis produced by the operation of an agent which acted in a manner similar to that of a chill upon the pulmonary vessels. He had never known any case which seemed to him to suggest the theory of contagiousness. He had known cases of phthisis attacking many members of one family, even simultaneously, but never under circumstances which supported the view of contagion. Were this doctrine true one would expect to see, in families predisposed to phthisis, frequent instances of extension from one person to another. He had never seen such. He strongly held to the fact of the hereditary transmission of phthisis, and could not see how this agreed with its accidental origin by taking bacilli into the body.

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February 12th, 1883.

DISCUSSION ADJOURNED FROM JANUARY 29TH.

THE RELATION OF THE TUBERCLE BACILLUS TO  
PHTHISIS.

By C. THEODORE WILLIAMS, M.D.

SINCE the announcement of Koch's celebrated discovery of the tubercle bacillus, attention has been closely directed to its detection in the sputum of phthisis, and subsequent observations have confirmed its intimate connexion with the disease, though the exact part it plays in its pathology and causation will require much further research to elucidate. The first question of importance which meets us is, Are the bacilli always present in the sputum of phthisis, and absent in that of other diseases? Important evidence

has been given on these points by Drs. Balmer and Fraenzel, D'Espine, and Drs. Heron, Whipham, and Dreschfield, and now I propose to give the results of the examinations which have been carried on in the Brompton Hospital for some months with a view to test Koch's conclusions. The number of patients whose sputum has been tried is one hundred and thirty. Some earlier examinations were made, but as they were few in number, and not systematically carried out, I have omitted them. The method used was that of Dr. Heneage Gibbes, the staining being accomplished by his magenta aniline solution and chrysoidin; in some later slides methylene blue was substituted for the chrysoidin. The specimens tested were either taken from the sputum collected during the twenty-four hours or from that expectorated in the early morning, and the rule adopted has been to repeat the examination in the case of a negative result two, three, or four times, so as to ensure accuracy. Forty-five of the patients were under my care, and eighty-five under the care of my colleagues, Drs. Douglas Powell, Tatham, Reginald Thompson, and Roberts, who kindly allowed me to make use of the examinations and records made in their wards. In one hundred and three cases the slides were prepared and examined by my clinical assistant, Mr. G. Perez, and in twenty-seven by my other clinical assistant, Mr. Waugh. Dr. Powell's thirty cases have been carefully checked by him, and I have myself gone through all the others with a good Zeiss microscope with an F objective and a No. 4 eyepiece, giving a magnifying power of 1020. Twenty-one patients were examples of various lung affections other than phthisis; two were cases of asthma, five of emphysema, two of bronchitis and emphysema, three of bronchitis, one of pleurisy, three of bronchiectasis, one of pneumonia, one of empyema, two of pulmonary congestion (the result of heart disease), and one was an obscure case of lung induration. In not one of these did the sputum contain bacilli. The one hundred and nine phthisical cases consisted of acute and chronic forms, and included instances of tuberculo-pneumonic phthisis, of scrofulous pneumonia, of fibroid phthisis, catarrhal phthisis, and a large number of cases of chronic tubercular phthisis. Cavities were detected in one or both lungs in eighty-one of these patients, nine were in the stage of early consolidation, the rest were undergoing softening or were subjects of old tubercular induration with emphysema and fibrosis. In the 109 phthisical cases we detected bacilli in 106—that is, in all but three; and even of these three, in one it could not be affirmed

with certainty that they were absent. There was a difference of opinion between the two observers, and unfortunately the patient left the hospital before we obtained a further specimen. In another, a case of contracted cavity, under my charge, the sputum was so scanty that it was very difficult to obtain any, and I have my suspicions that the secretion, owing to the blocking of the cavity-bronchus, was entirely bronchial. In the other case the slides were not very successfully mounted, and circumstances prevented our obtaining more sputum, but I thought it just to include it in the list.

So far our results agree with those of previous observers as regards the specific character of the bacilli, and the fact that none were found in the cases of bronchiectasis, in which the expectoration was extremely fetid and abundant, separates the tubercle bacillus from any of the numerous organisms connected with fermentation and decomposition.

Most of our consumptive patients had cavities, but it will be observed that nine were cases of early consolidation. These were all cases in which both the history and the physical signs forbade any suspicion of a cavity, and I offer them as a proof that the bacilli are found in connexion with tubercle formation, and not only with softening and excavation. It will be remembered that in some of Koch's specimens they were seen together with miliary granulations. Dr. Heneage Gibbes' distinction of two kinds of tubercle, one containing bacilli and another devoid of them, is most important.

The second question seems to be as to the relation between the numbers of the bacilli and the progress of the disease. Is their abundance coincident with great activity, and does their disappearance indicate quiescence? In dealing with this point we must bear in mind the different expectorating powers of patients, some of whom, especially in the later stages, have great difficulty in ejecting the secretion, large accumulations of which are often found in cavities after death. Then, again, we must remember Dr. Gibbes' caution as to ensuring that the material comes from the lungs and not from the throat. A third consideration is, What do we understand by activity of disease? I take it as signifying either extending tuberculisation or softening and excavation, or a combination of both processes. The occurrence of pyrexia, and especially of prolonged pyrexia, indicates some form of activity, though it is

possible, as I have shown elsewhere, for the disease to progress and extend without this concomitant. Where, however, it is present, we may be quite certain that active tuberculous processes are going on.

Temperature observations were carefully taken in all the 109 cases, and in 51 pyrexia, ranging from 100° to 105° F., was present at the time of the examinations. In some of these pyrexial cases the bacilli were very abundant, but in others, though the sputum was abundant, bacilli were few, and this in spite of numerous careful observations. In one patient under my care—a case of acute tuberculo-pneumonic phthisis, which terminated fatally in ten weeks—the temperature ranged from 100° to 103° F. Cavities formed in both lungs, and the expectoration was fairly abundant. Bacilli were present, but always in small numbers. In another case of somewhat acute disease, where a cavity existed in one lung and a second one was forming in the opposite lung, the temperature ranging from 99° to 103° F., it was only after four trials that any bacilli whatever were detected. In some chronic and quiescent cavity cases the bacilli have been found in fair number, and even abundantly. In two cases of haemoptysis, under the care of Dr. Tatham, bacilli were detected in the blood expectorated. With regard to the proportion present during periods of quiescence or arrest of the disease, I should regard their total disappearance as an eminently favourable sign. Out of four cases of contracting cavities where very favourable changes were progressing, bacilli were detected in three, but in small numbers; in the fourth case, above mentioned, none were found. Therefore we are hardly justified in concluding that there is any definite ratio between activity of disease and number of bacilli, though as a rule they are few in cases where the disease is quiescent.

Now, what bearing has the bacillus on the question of the contagion of phthisis? And to answer this question we must ascertain whether they exist in the air exhaled by consumptive patients, as well as in their sputum. Dr. Ransom has found them in the air of a room containing several advanced cases of phthisis, and they have also been detected by Dr. Charnley Smith in a respirator worn by a patient. I have suspended glass plates covered with glycerine in the extracting flues of the Brompton Hospital, and thus subjected them to a stream of air with a velocity of 300 to 400 feet a minute issuing from numerous wards containing consumptive patients. In this way I sought to obtain a concentration of the

exhalations, and on testing the plates they were found to contain abundant bacilli. Of course this was bringing the material to a focus, but still we may fairly conclude that the breath of one consumptive patient contains some bacilli, and remembering the number of respirations performed during the day, each must distribute a large number of these in the atmosphere, especially of crowded cities, where so large a proportion of the mortality is from consumptive diseases.

Taking into consideration the sputum, which, when dried, may be disintegrated and inhaled in our streets, we must admit that if the bacillus is the agent of infection it is a very widely spread one. How are we therefore to account for the comparatively few instances of infection? The evidence of the Brompton Hospital distinctly negatives any idea of its contagion, in the ordinary sense of the word, the number of cases of phthisis occurring among the resident staff being fewer than even at some general hospitals. Also intimate life with a consumptive patient, such as the relations between husband and wife, mother and daughter, two sisters, and members of the same family living together, ought to ensure *certain* contagion; whereas we know this is not so. Some cases are contracted in this way, but they are few in number. I would offer as an explanation that the bacillus requires in every instance a congenial soil to enable it to multiply and to carry on its work. Such soil is to be found in individuals who have been subjected to one or more of the well-known predisposing causes of consumption, such as heredity, bad food, bad ventilation, overwork of mind or body, unhealthy occupations, damp soil, which bring about that blood crasis, or weakness of constitution, which shows itself in various low inflammatory processes, in the exudation of leucocytes, the formation of giant cells, in adenoid hyperplasia, in the tendency to form and exude cells which grow and do not develop into tissue, but die and caseate. The bacillus penetrating to the lungs of such subjects probably sets up inflammation, giving rise to adenoid hyperplasia and the formation of miliary tubercle, and then spreading through the lymphatics it assists in the work of consolidation and destruction. In the walls of cavities it probably finds the best conditions for growth and development—viz., warmth and moisture. People in good health, with sound organs, in full physiological activity, may defy these organisms, and it is probable that they inhale them with impunity. While, therefore, the bacillus must be duly

considered in the origin of phthisis, it may be regarded as a more or less exciting cause of the disease, requiring a previous weakening of the constitution to enable it to act. It is, however, possible, if in great numbers and under specially favourable opportunities for multiplication and development, such as are to be found in the hot climates of the South Pacific Islands, that even individuals not predisposed may be attacked, and that the disease may run a particularly short and virulent course.

As to prevention and treatment, the points to be aimed at are; first, the disinfection and removal of the sputum, a measure which was carried out at the Brompton Hospital long before Koch's discovery of the bacillus; next, the dilution of the bacillus by good ventilation, and its destruction, if possible, by local antiseptic treatment in the form of inhalants, sprays, &c. To carry this out a number of respirators of different shapes and sizes containing a great variety of antiseptics have been strongly recommended. After prolonged trial of nearly all of these, I have been greatly disappointed with the results. When the antiseptics are combined with some sedative, such as chloroform or conium, the patient often experiences some relief to the cough from wearing such respirators; but by careful physical examinations I have thoroughly satisfied myself that the use of antiseptics in this form exercises no influence on the progress of the disease, while, by muzzling the patient to a certain extent, they interfere with the freedom of the respiratory movements which is so essential in the treatment of phthisis. Warm antiseptic inhalations or steam sprays impregnated with these substances, or the fumigation of rooms by dry antiseptic vapours, are not accompanied by this latter objection, and are therefore preferable. Measures directed to the fortifying and strengthening of the constitution, thus enabling it to withstand the attacks of the bacillus, will be found most effective in the long run, though I would not exclude antiseptic treatment, especially in the form of pure air, pure food, and abundant exercise in mountain climates, which induce more complete development of the organs of respiration.

Dr. HERON said that the bacillus had now been found in many organs, and in the living subject, in the sputum, in the urine, in an ulcer of the tongue, in lupus, and in an unopened knee-joint. He had found the bacillus himself in fifty-four cases of phthisis, and he believed that practically it would always be found in cases where physical signs of phthisis existed. But in some of these cases the physical signs were so slight that he should have hesitated to make a diagnosis without the

aid of the bacillus. As regards prognosis, he believed a few bacilli betokened a chronic course; a large number and persistence of them indicated a rapidly fatal course. The same results had been obtained by Balmer and Fraentzel. In patients rapidly sinking, the bacilli were found in large numbers, often grouped into masses. This grouping indicated an unusually rapid course, and in one or two cases it had preceded by a day or two an aggravation of the symptoms. Some observations appeared to show that the bacilli might appear before physical signs were manifest. In some cases the bacilli, which had been present in moderate amount, had disappeared from the sputum for several weeks. In such cases he thought that the patient might be considered to be in a fair way of recovery. Heredity he had found to exist in 30 per cent. of his cases seen at Victoria Park Hospital during four years.

Dr. HENEAGE GIBBES directed attention to two points: first, the difference in the structure of miliary tubercles in the lungs and the relation of the bacilli to those of different forms; and, second, the presence of bacilli in the smallest or commencing tubercles. He showed specimens of the two forms of miliary tubercle from cases which had run a very similar clinical course, and in which the naked-eye post-mortem appearances were very similar. Microscopically the tubercles in the one specimen were of the reticular form, consisting of a distinctly fibrillated structure with one or more giant cells and a caseous mass in the centre. In the other specimen the tubercles were non-reticular, having no fibrillation, no giant cells, but consisting of irregular cells in the periphery and a caseous mass in the centre. In the one form the surrounding vesicles contained catarrhal products, in the other fibrinous exudation. He had examined a large number of lungs affected with the reticular form, and had only succeeded in finding bacilli in three cases, and these in small numbers, distributed through the reticulum. In the non-reticular form, however, he had invariably found bacilli in large numbers in the caseous centre. Dr. Gibbes also pointed out that the bacilli were to be found in the smallest tubercles. A lung might be studded with tubercles, each one containing thousands of bacilli, and yet the patient might die before the destructive process had gone far enough to cause any of them to be ejected with the sputum; thus there were two forms of fatal tuberculosis in which no bacilli could be found in the sputum. He could not agree with Dr. West that little remained to be done on the subject; on the contrary, he felt sure that the threshold only of the inquiry was reached, and that it would require long and patient investigation before the relation of the bacilli to tubercle was fully determined. He added that he had examined the lungs of guinea-pigs which had become tuberculous after being kept in the air shafts of the Brompton Hospital, and had found no bacilli in them; and he knew of an instance in which a guinea-pig inoculated with sputum from a case of phthisis presented a glandular abscess in the thigh which abounded in bacilli, whereas other organs, although full of tubercles, did not yield a single bacillus.

Dr. BROADBENT remarked on the number of views of the pathology of tubercle and phthisis that had been in turn presented to the profession. He himself had held that phthisis was one disease, and that that disease was inflammatory. We were now looking not for a particular histological element, but for a particular irritant to start the inflammation. There were still difficulties in accepting the bacillus as the

universal cause of the process. One difficulty was the fact that the disease often remained for so long a period limited to one lung. The question of the communicability of phthisis was not in any way affected by the discovery of the bacillus; and he thought that the issue of a circular on this subject by the Collective Investigation Committee was an injudicious step. He believed that the replies would be largely dictated by imagination, and unless the Committee were to go behind the evidence and estimate the value of each communication, the work of the Committee would be seriously discredited. He had found better results from disinfectant inhalations in phthisis than Dr. Williams had. The bacilli were, as Dr. Gibbes had pointed out, beyond the reach of inhalations, but the cavities contained putrid matters, which it would be an advantage to disinfect.

Dr. DETHDALE said that he had repeated Villemin's experiments on inoculation of tubercle with fatal result to the animals employed; but he was not satisfied that the lesions produced were tubercle. He had for several years sought diligently for a case of transmission of the disease among his phthisical patients, but had failed to find one. In more than one-half of private patients heredity was present; but it was difficult to obtain trustworthy family histories in hospital cases. He had found no good results from antiseptic inhalations.

In reply to the President, who asked whether in the case of the guinea-pig with glandular abscess the pus containing bacilli had been taken from the interior of the gland or from the surrounding tissue, Dr. GIARRE said it was from the interior of the gland.

Dr. WHIPHAM, in reply, pointed out that the bacilli had been found in the urine in cases of tuberculous kidney, in the spleen, and in a closed suppurating knee-joint. The undisturbed position which bacilli needed for their development seemed eminently afforded by the apices of the lungs, which might explain the selection of that part as the starting-point of phthisis. In two cases, the one related in his paper and another, the bacillus was demonstrated before physical signs appeared.

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February 19th.

#### A CASE OF ELEPHANTIASIS.

By W. HEATH STRANGE, M.D.

DR. HEATH STRANGE exhibited a girl, aged seventeen, who had been suffering for the past ten years from disease of the lymphatic vessels of the left lower extremity, with dilatation and rupture, and a discharge of a milky white fluid, accompanied with an enormous enlargement of the thigh, calf and foot justifying the application of the name "elephantiasis."

Maria P.—had been under observation since infancy, was born a

Islip in Oxfordshire, was brought to London when a baby, and had since resided in St. John's Wood with her parents. At three months old she was vaccinated ; it was unsuccessful, but an eruption followed spreading over her face, head, and buttocks, leaving scars still visible on the latter, especially on the left side.

When she was seven years of age, her calf commenced to swell ; the swelling gradually extended to the thigh and then to the foot, without pain and without preventing her walking. The skin was white and tense, and presented the appearance of a phlegmasia dolens, occurring in an adult after labour. There was no history of any injury to the thigh. After two years she was admitted to the Great Ormond Street Hospital under the care of Dr. Cheadle, and was discharged at the end of three months, her leg and foot were much reduced in size, but her general health was greatly debilitated.

The swelling returned, and with it repeated attacks of pain, heat, and redness of the surface of the leg, and severe constitutional derangement. The skin became darkened in colour and thickened, tubercular patches formed on the dorsum of the foot, at the roots of the toes on the inner ankle, and on the margin of the inner side of the sole of the foot. After exercise a small punctiform opening in the centre of the surface of the inner side of the thigh commenced to discharge a white milky fluid. This fluid had a faint and disagreeable odour. The force of this discharge was sometimes so great as to squirt the fluid across the room. Soon after the discharge commenced in the thighs, the raised surface on the foot began to discharge very freely, and the quantity was so great that it could be poured out of the boot. Crusts formed on the foot and toes and the leg and foot assumed an enormous size.

After a very severe attack of inflammation accompanied by redness of the surface of the skin and great pain in the knee, something appeared to "give way" as she described it, the pain ceased, and from that time the limb had gradually decreased although there had been no discharge for the past eight months. The calf at this time measured  $18\frac{1}{2}$  inches in circumference, and the foot exceeds  $14\frac{1}{2}$  inches round. It was now reduced to nearly the same size as the right leg, although the shaft of the tibia appeared enlarged and the left foot was slightly longer than the right.

In November last the *left leg* measured—thigh  $18\frac{1}{2}$  inches in circumference, calf 14 in., above the ankle  $10\frac{1}{2}$  inches, dorsum of the foot 11 inches. The *right leg* measured at this time—thigh 15

inches in circumference, calf 11 in., above the ankle  $7\frac{3}{4}$  in., dorsum of foot  $7\frac{1}{2}$  in.

Feb. 2nd, 1883.—The *left leg* measured—thigh 18 inches in circumference, calf 12 in., instep 9 in. The *right leg* measured—thigh 15 inches in circumference, calf 11 in., instep 8 in.

The treatment adopted was rest, constant bandaging, generous diet, and alterative tonics. Cod-liver oil and the syrup of the iodide of iron appeared to have greatly benefited her, and contributed to the favorable result of her case.

The PRESIDENT asked what was the duration of the discharge, and alluded to a similar case under his care.

Sir JOSEPH FAYRER pointed out the distinction between local affections and elephantiasis. There was a similar hypertrophy of the tissues, &c., in each; but true elephantiasis was the local expression of a constitutional disease, and was limited to the seaboard of certain tropical regions, not extending far inland. He doubted the origin of the disease from filariae in the blood, as they were sometimes absent, and he had never known local treatment of any avail except in some young people, who could be moved from place to place. Elephantiasis occurred very seldom in persons of unmixed European blood. In some nations removal to a drier climate appeared to have been of service. He had tried ligation of the femoral artery without success; the swelling was reduced as long as the patient remained in bed after the operation, but recurred on his resuming work. Similar temporary reduction followed bandaging. In elephantiasis of the scrotum excision of the tumour often removed the constitutional disease.

Mr. EDMUND OWEN thought the term "elephantiasis," as applied to these cases of simple hypertrophy, to be of no pathological value, merely suggesting a superficial resemblance. Although hypertrophy due to disease of the lymphatics was more common in the tropics, still cases were occasionally met with in this country, and he was inclined to attribute them to chronic inflammatory changes.

Dr. ROUTE inquired if the source of the lymph used in vaccinating the patient was known. He thought it possible to produce an artificial elephantiasis, and had seen such a case where nitrite of amyl had been accidentally introduced in a morphia injection.

Mr. BRYANT thought the possibility of curing the disease by removing the local manifestation not inconsistent with received views of a filarial origin. He knew of a case in Leicester where the disease had apparently been transmitted through three generations, and none of the members of the family had ever left the town. Although unable to explain the good effects of ligation of the femoral artery, complete cure had followed this procedure in a case of his, and in another case temporary cure had followed ligation of the superficial femoral alone. He had seen elephantiasis in a man who never had left England, and in two boys, sons of a West Indian, but brought up in England.

The PRESIDENT exhibited three photographs of Elephantiasis Scroti.

Sir J. FAYRER did not consider the cases met with in England as examples of true tropical elephantiasis, which begins with febrile dis-

turbance and rapid hyperplasia, followed by slower growth. On removal of the growth the constitutional disturbances cease.

Dr. CROCKER said that the condition of elephantiasis might be produced in various ways. He had had much success with the elastic bandage.

Dr. HEATH STRANGE, in reply, said that the discharge continued uninterruptedly for several months, and then ceased altogether. The fluid was not examined. The veins were not apparently enlarged. The aspect of the limb was that of phlegmasia dolens.

#### A CASE OF FÆCAL ABSCESS, COMMUNICATING WITH THE BLADDER, RECTUM, ILEUM, AND CÆCUM.

By CHARLES A. BALLANCE, F.R.C.S.

THE history of the case was as follows:—The patient was a lieutenant in the navy, aged twenty-seven years. While serving in the Pacific, three years before he came under observation, he had an attack of acute dysentery, which subsequently became chronic and remained in that stage until the symptoms of vesical trouble appeared. The attack of dysentery he attributed to the fact that the food on board ship, on account of the accidental prolongation of the voyage, not only ran short in quantity, but became bad in quality. There was no history or evidence of any venereal disease.

The symptoms indicating that the bladder had become involved appeared eighteen months before I saw the patient, at which time wind was occasionally noticed passing per urethram. Three months later faecal matter was observed coming away by the same channel. The quantity escaping in this way was at first small, but subsequently much increased, and at the same time there had been much loss of flesh and strength.

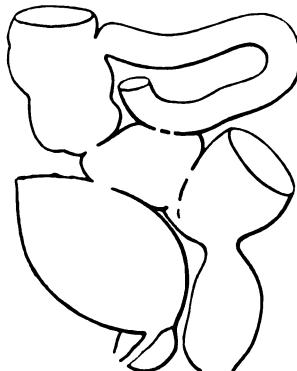
When I first saw the patient he was much emaciated, was suffering from a sort of spurious diarrhoea, and was passing much feculent matter and gas by the urethra. The urine was horribly offensive, and the faecal matter which it contained was dark in colour, and more characteristic of the contents of the large intestine than of the small. A fulness could be felt above the pubes, more on the left side than on the right. There was no escape of urine per rectum. Constant and most severe pain was experienced at the neck of the bladder and the posterior part of the urethra, which morphia at last utterly failed to relieve.

The following reasons induced me to think that the large intestine was more likely to be involved than the small:

1. The length of time the patient had lived from the commencement of symptoms.
2. The character of the faecal matter escaping by the urethra.
3. The history of dysentery.

After consultation with Mr. Croft and Dr. Edmunds I performed colotomy on the right side, with antiseptic precautions. The bowel was stitched to the abdominal wall, and not opened until the third day after the operation. The intestinal contents then freely escaped from the wound, and, strangely enough, the pain at the neck of the bladder almost entirely disappeared. So far relief was afforded, but on the tenth day the patient suddenly became collapsed, and died.

The appearances post mortem were shown in a preparation exhibited and in a drawing which I exhibit. There was a tight stricture



of the rectum. The gut was dilated above the stricture. On the anterior wall of this dilated portion were three apertures, which led into an inflammatory cavity situated above the bladder. Adherent to the wall of this cavity were the cæcum and a portion of ileum ten inches from the ileo-cæcal valve. Both the cæcum and the ileum communicated by small apertures with the cavity of the faecal abscess. This latter opened into the upper part of the bladder; the opening being half an inch in diameter.

The sequence of events may thus be summarised:—Dysenteric ulceration of the lower end of the large intestine, producing in its

course stricture and perforation. Following upon the perforation the formation of a fæcal abscess, which opened into the upper part of the bladder. At a later period the cæcum and ileum, which had previously become adherent to the wall of the fæcal abscess, opened into it. In this manner the bladder came into communication with three parts of the intestinal canal—the rectum, the cæcum, and the ileum.

*Remarks.*—1. The colotomy would probably have been more successful if it had been performed at an earlier period, when only the rectum was implicated.

2. In such cases as the above would a perineal incision into the membranous portion of the urethra be a better course to adopt? In the case above narrated this alternative plan of treatment was discussed, but unhappily rejected. The question arises, What would have been the advantage to the bladder and urethra if this operation had been done? They would have been placed in a state of repose, and the spasm and pain produced by the passage of solid matter would probably have ceased. Looking back, then, from the vantage ground of the post-mortem examination, I think that a perineal incision would have been the best and wisest method of relief.

3. If such a case was seen at an early period, and there was a high probability that the fistula involved the lower part of the large intestine, would it be justifiable to do a *colectomy*, to stitch the proximal portion of the gut to the abdominal incision, and having united the cut margins of the distal portion to return it into the abdominal cavity? I think so. The parts would then be placed in the most advantageous condition for recovery. No fæcal matter could enter the bladder. The abnormal communication would have rest, and, having rest, would contract, and might ultimately close. A complete cure in this way would be obtained.

Mr. BLACK thought colotomy the best mode of giving relief in this class of case.

Mr. BRYANT thought the cause of the fistula in this case more common than was usually believed, and more common than cancerous ulceration. He had performed colotomy in two such cases with permanent relief, and he argued against the postponement of that measure. He thought the perineal drainage hardly feasible.

A CASE OF LARGE FEMORAL HERNIA, WHERE SUD-  
DEN RUPTURE OF ITS COVERINGS OCCURRED,  
AND A PORTION OF INTESTINE WAS PROTRUD-  
ING FOR SEVERAL HOURS BEFORE REDUCTION

By BERNARD PITTS, F.R.C.S.

THE following case is a very unusual one. I have not heard of any similar accident. It is certainly rare for recovery to take place when the intestine has been so much manipulated and so long exposed. The patient was admitted last December into St. Thomas's Hospital, into one of Mr. Mason's beds. I operated on her as a case of urgency. I am indebted to Mr. Mason for allowing me to continue in charge of the case.

Frances V—, aged forty-six, a laundry-woman, has suffered from a right femoral hernia for twenty years. She wore a truss till three years ago. On Aug. 30th, 1880, she was admitted into Guy's Hospital with symptoms of strangulation of three days' duration. She had not worn a truss for a year previously. An operation was performed by Mr. Jacobson. The sac was very thick and the intestine dark. She left the hospital on Sept. 27th, wearing a truss. The hernia at the time of operation was about the size of two fists. For one year after this she kept up the hernia with the truss, but subsequently the great increase in the size of the hernia rendered the truss useless. During the last winter she had suffered from a bad cough, and the hernia became as large as a child's head, but was always reducible. Several small ulcers formed on the skin, which caused her to leave the truss off altogether. About nine o'clock on the evening of the 4th of last December the patient was going upstairs in her home at Kennington, when, whilst sneezing violently, she felt something give way suddenly in her right groin. She became very faint, but managed to walk to her bedroom, and then discovered that about a foot of intestine had escaped through a rent in the coverings of the hernia. She made an attempt to return it, and sent for her medical man, who tried taxis for a short time, and then advised her removal to St. Thomas's Hospital. She was brought to the hospital in a cab on a cold and frosty night. I saw her directly after her admission at twelve o'clock. She was an extremely stout woman, and was suffering then from severe shock. An examination

under ether was at once made on the bed, and a foot and a half of small intestine was found protruding through a rent in the skin about an inch long, and situated a little above the old operation cicatrix. There were one or two small ulcers to be seen on and near the lower part of the cicatrix. The exposed intestine was bruised, congested, dirty, and very cold. A number of hairs and foreign particles were removed from the bowel and mesentery, which was then carefully cleansed with warm carbolic lotion. Failing to get the bowel back by taxis, the opening in the skin was enlarged freely, and a large quantity of small intestine escaped from the sac, at least four or five feet, together with the cæcum. A slight enlargement of the crural ring was made with the hernia knife, and by patient manipulation the intestines were returned into the abdominal cavity. A sponge was placed in the opening, and the greatly thickened sac was dissected from its surroundings and removed; this involved the ligature of a considerable number of vessels. The sponge was then removed, drainage for the peritoneal cavity provided, and the cut edges of the sac brought together by very stout catgut. A large portion of redundant skin (including the cicatrix and the ulcerated parts) was then removed, and the edges of the wound brought together by silk sutures, and the wound dressed with carbolic gauze. The patient slept a little during the night after a subcutaneous injection of morphia. On the morning of Dec. 5th the wound was dressed, the temperature being 100·4°. In the after-part of the day the breathing became very laboured. Pulse 132; temperature 102·4°; there was great lividity of countenance. She was propped up in bed and brandy was administered. The urine was found to be albuminous. The subcutaneous injections were discontinued. 6th.—Breathing decidedly better, but cough very troublesome. Temperature normal. The wound was dressed and the abdominal drain removed. After this she made a slow recovery, the temperature never reaching higher than 100°. She has been for some time convalescent and is wearing a truss.

*Remarks.*—It certainly seems difficult to understand how such an accident as happened to this woman was possible. By a mere effort of sneezing a thick sac and free moveable, though stretched, skin were split. The rent had much the appearance of an incised wound; it occurred at a part where the skin was perfectly sound, but close to the cicatrix of the former operation. I imagine this would be a point more likely to give way than the cicatrix itself,

because it was the junction, as it were, of the new cloth with the old, and where the moveable part of the skin joined the adherent. The case is interesting also in a medico-legal aspect, for supposing the patient had been unable to give an account of the occurrence, suspicion of violence must necessarily have arisen. In the treatment of the case the most important point was thoroughly to cleanse the protruded parts and then to get them back as quickly as possible into the abdominal cavity. In order to avoid increase of shock I operated on the bed at the time of the examination of the patient, and did not use the spray. Drainage of the peritoneal cavity was provided, because it was thought that some peritoneal inflammation might necessarily be expected. The latter part of the operation—viz. attempting a form of radical cure—occupied a good deal of time, and must undoubtedly have increased the shock to the patient, but was necessary on account of the very violent cough from which the patient was suffering; and, moreover, the woman is now in a much better condition than she was before the accident occurred. The hernial opening is now perfectly under the control of a light truss, and with proper care the hernia ought never to attain to anything like its former inconvenient dimensions. I believe also, that by getting rid of a large sac and redundant skin, the chances of continued suppuration are much lessened, and where there is a large hernial opening, the ligature of the neck of the sac diminishes the danger of inflammatory extension from the wound to the peritoneal cavity.

When the sac has been opened in cases of strangulation, occurring in large umbilical and scrotal herniae especially, a great deal of improvement in the after-condition of the patient may be effected by taking redundant parts freely away. In August, 1881, a man was under my care with a very large femoral hernia, the largest I have ever seen, quite as large as a man's head. It had been irreducible, and was of about the same size for many years. I had to open the sac for symptoms of obstruction. After taking away a quantity of omentum, and replacing the intestines, I dissected out the sac, removing a portion of sac and the corresponding skin, which measured about thirty inches in circumference. I was fearful at the time whether the abdomen would tolerate the continued presence of so much intestine that had been in the habit of dwelling outside. The man made a good recovery. I have seen him frequently since, and he has been able to keep up the rupture with his truss. He has therefore parted with a most inconvenient burden. The sac

in a very old-standing hernia is so thick that union of its edges forms a very firm support. The success that followed in this case determined me to pursue a similar course in the case here recorded.

Mr. EDMUND OWEN observed that the case was probably unique. Femoral hernia which had once been operated on were apt subsequently to assume large proportions. A few years since he had operated on a lady for strangulated hernia, who, twenty years before, had passed through the same kind of trouble. After this first operation there had been free sloughing of all the integuments. The patient did well after the second operation. In neither of these operations, nor in the present case, had the spray been employed.

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*February 26th, 1883.*

A CASE OF EARLY EXCISION OF THE HIP-JOINT.  
RECOVERY, WITH A VERY MOVEABLE  
FALSE JOINT.

By WALTER PYE, F.R.C.S.

THE patient was shown, and was able to walk, and run about quite well, what limp there was being due to the shortening of about one inch in the length of the limb.

The boy was admitted into the Victoria Children's Hospital five months ago, with the history that four weeks only had passed since the beginning of symptoms pointing to hip disease. In spite of the shortness of the interval the disease had run so acute a course that the child was extremely exhausted by suppurative fever; and the upper part of the thigh, except in the inner aspect, was occupied by a very large abscess.

Grating was distinctly felt, and it was determined to open the abscess by an incision which would allow of removal of the head of the bone if it appeared then to be advisable. This was done, and on exploring the cavity the head of the femur was found to be all but detached, and broke off in the fingers. The excision was performed in the usual manner, the bone being sawn across below the great trochanter; it was there found to be healthy, as was also the acetabulum. The child was put up in a Bryant's double splint, in the prone position, and this was maintained for the first fortnight or three weeks.

From the date of the operation the child began to improve in health, and the whole period of convalescence was remarkably short. The wound healed soundly in between three and four weeks, and the splints were then left off and movement of the limb encouraged.

In six weeks from the operation the weight of the body could be borne on the limb, and walking was commenced; in three months the child was as well as when shown. At the present time, the end of the shaft of the femur obviously played in the acetabulum; the movements of rotation, flexion, and adduction were apparently perfect, but abduction was limited. There was no flattening of the gluteal fold, and the limb had evidently grown since the operation. The child was between three and four years old.

The main points of interest in this case appeared to be :

1. The very complete recovery which may be hoped for, at any rate in children.
2. The early age of the patient, coupled with the growth of the limb since the operation.
3. The extreme rapidity of the destructive process, separation of the head of the bone taking place within four weeks from the commencement of the disease.
4. The advantage of the prone position in children for the cleanly nursing and the prevention of bed-sores.

The PRESIDENT said he was rather in favour of waiting in such cases.

Mr. EDMUND OWEN said that had not the result in this case been so satisfactory he would have suggested that the excision might have been limited to the intracapsular portion of the femoral diaphysis.

Mr. W. ADAMS thought excision should be undertaken as soon as the presence of diseased bone was made clear.

Mr. PYE, in reply, said that Listerian precaution was not followed in this case.

## DUPUYTREN'S CONTRACTION OF BOTH HANDS.

By F. R. FISHER, F.R.C.S.

Mr. FISHER exhibited a woman, fifty-two years of age, with well-marked Dupuytren's contraction of both hands. It commenced two years ago in the left hand, with drawing down of the little finger. The first phalanx was drawn to nearly a right angle with the metacarpal bone, and the second phalanx was flexed on the first, almost touching the palm; on the right hand the ring and little

fingers were involved. The condition was rare in females. The patient did not do much hard manual work ; she had never had gout, but her father suffered from it. Mr. Fisher contrasted this with a condition of flexion of the little finger, independent of contraction of the palmar fascia, the first phalangeal joint alone being implicated, a condition common in young females. In answer to the President, he stated that no operation had as yet been performed, but that he intended to operate on both hands in succession.

Mr. W. ADAMS had only seen three cases of Dupuytren's contraction in women, two depending on gout. Contraction of the fascia and its digital prolongation was essential for certainty of diagnosis.

Mr. BLACK stated that an example of this contraction in a female was at present in the dissecting-room at Westminster Hospital.

Dr. HARE protested against attributing this and similar affections to gout without full evidence from family or personal history, and the result of examination of the blood or serum. He had seldom seen this affection in cases of gout.

Dr. ROECKEL said the affection was common in Germany, where gout was very uncommon.

Dr. EWART thought the affection frequently associated with gout at any rate, contraction of the fingers was often found in persons who inherited or manifested gout. Were not the various forms of contraction stages of one disease ?

Mr. ADAMS, who replied for Mr. Fisher, admitted that the pathology of these cases was very obscure. He had never operated on those cases which could be treated successfully by prolonged mechanical means. Other forms might depend on contraction of the tendon, but in Dupuytren's contraction the fascia was implicated. He believed it to be gouty in origin because of its being found most often in the upper classes of society, and in butlers and footmen rather than in the working classes, because of its being symmetrical, often inherited, and often associated with gout.

#### ASCITES IN A CHILD ; PARACENTESIS ; RECOVERY.

By WILLIAM H. DAY, M.D.

M. K.—, st. 8, a pale, strumous-looking girl, with large eyes and a flat nose, was admitted into the Samaritan Hospital, as an in-patient under my care, on May 6th, 1882. Her mother stated that for some months she had been losing flesh and strength, and that for three weeks before admission, her abdomen had been increasing in size, whilst her face and legs were getting smaller. Five years previously she had suffered from measles and whooping cough, from which she made a good recovery.

On examination, the abdomen was smooth and considerably dis-

tended ; when lying on her back it was tympanitic on percussion from the ensiform cartilage to the pubes. Both flanks were fairly resonant. When the patient was placed on one side the dependent part was dull and the fluid shifted with the position. No enlargement of the liver or spleen could be detected. The heart and kidneys were healthy. The circumference of the abdomen at the umbilicus was twenty-three inches and a quarter. The pulse was quiet ; temp. 100° ; tongue clean ; bowels regular ; urine pale, acid, sp. gr. 1025, non-albuminous. Ten minims of balsam of copaiba were ordered three times a day in a little milk, and the diet consisted of fish, milk, beef-tea, and eggs.

On the 25th (three weeks after admission) the abdomen had increased at the umbilicus to twenty-five inches, and at an inch higher up to twenty-six inches. There was a considerable quantity of free fluid in the abdominal cavity, and fluctuation was distinct. The urine remained clear, and was not increased in quantity by the copaiba. The dose of the balsam was raised to fifteen minims three times a day, and an aperient powder consisting of rhubarb and sulphate of potash was given every other morning.

June 1st.—The morning temperature was 98°, the evening 99.2°, more urine was passed, and it now contained excess of phosphates. The aperient powder acted well, producing a moderate watery action of the bowels twice a day. I now substituted for the copaiba balsam the copaiba resin mixture used at Guy's Hospital, which I had formerly given with apparent success in a case of ascites.\* This consists of six grains of copaiba resin in a little spirit of chloroform and mucilage.

8th.—There was no improvement, the urine was normal and copious and the bowels were free. She took her food well but looked thin, and the abdomen was steadily increasing in size. The copaiba was now omitted, and the following mixture given three times a day :

B. Tinct. Ferri Perchlor.,  $\text{m}_x$ ,  
 Tinct. Digitalia,  $\text{m}_v$ ,  
 Glycerini,  $\text{m}_{xv}$ ,  
 Aquam, ad  $\text{J}_\text{as}$ . Ter die sumend.

16.—She was no better, and the abdomen was getting tense ; the girth at the umbilicus was twenty-seven inches ; there was some congestion in the lower lobes of the lungs, and wheezing. As the

\* 'Clin. Trans.', vol. x, p. 163.

disease did not yield to any of the remedies employed, the child was tapped below the umbilicus, and fifty-six ounces of straw-coloured ascitic fluid were drawn off; an hour later the temperature rose to 100°; the following morning, it was normal, and the child was free from all discomfort. For some days after the paracentesis there was much tympanitic distension.

July 2nd.—When the child lay on her back the percussion note was tympanitic from the ensiform cartilage to the pubes. There was evidence of free fluid in the peritoneal cavity. When the legs were elevated and the body turned on one side the dependent part elicited a dull note on percussion. The child's appetite was good, but she still looked very delicate and the body was slowly increasing in size. I now prescribed the following mixture, of which a tablespoonful was to be taken three times a day :

℞ Elaterii, gr. j,  
Sp. Ether. Nitr., 3ij.  
Tinct. Hyoscyami, 3j.  
Syrupi, 3ss,  
Aquam ad 3vij. Fiat mistura.

18th.—Two doses of the mixture produced four copious watery motions, without faintness or sickness.

25th.—Up to this time one dose daily of the elaterium mixture had acted four times, and for the first time she had been a little sick, but she looked better and relished her food. The mixture was now reduced to two teaspoonfuls daily.

Aug. 8th.—The medicine had acted twice or three times daily, and the circumference at the umbilicus was an inch less than on admission, still there was free fluid in the abdominal cavity, and I feared as she was quitting the hospital and going home that it would increase. She was ordered to take the iron and digitalis mixture prescribed shortly after admission.

Sept. 22nd.—The patient (having left the hospital for six weeks) was brought to me by her mother for inspection; she had gained flesh and strength, and looked ruddy in the face. The circumference of the body at the umbilicus was reduced to twenty-four inches; it was nowhere prominent nor distended with flatus, and no fluid could be detected in the abdominal cavity. The outline of the liver and spleen was normal. The child had continued the mixture up to this day.

*Remarks.*—I have thought this case of sufficient interest to bring before the notice of this Society, not because there is anything novel in the treatment, but rather because it promises to be a genuine case of recovery, since there is no return of the dropsy up to the present time, and the child could not be in better health. Of the exact cause of this and similar cases of ascites in children, it is difficult to arrive at a satisfactory conclusion, when the heart, liver and kidneys are healthy, and there is no history of peritonitis, nor any evidence of peritoneal irritation through enlarged mesenteric glands. It may be contended that a temperature of 100° on admission was conclusive proof of a chronic inflammatory condition of the liver or peritoneum which had been going on for some time and had led to the effusion, but I think this view is scarcely tenable, as the temperature fell to 99° next day and at the end of a week was quite normal.

Two cases of chronic ascites in children are recorded by the late Dr. Hillier, in which the lesions found after death in the lymphatic glands, pleura, pericardium, and cavity of the peritoneum, were considered by Dr. Burdon-Sanderson to be the growth of connective tissue corpuscles, and of new fibrous tissue, due to chronic inflammation.\*

It seems to me that anaemia, and some cachectic states of the system arising from deficient food and insanitary conditions, may produce ascites alone. I have long indulged this opinion, partly based on the fact that the large "pot-belly" so commonly observed in delicate children, with impaired digestion, co-exists now and then with a small quantity of fluid in the peritoneal cavity, which becomes absorbed as the health improves. The blood in these cases is thin, the intestinal muscular fibre is weak, and the abdominal walls yield and stretch much more than in health. There is no abdominal disease in these cases, and no obstruction to the portal circulation. Now to what is recovery due in these cases? I have recorded a case of ascites in a child, 5½ years of age, in which after tapping to eighty-four ounces the peritoneum began to fill again. At the time of tapping in this case the girth at the umbilicus was 28½ inches; when copaiba resin was commenced (six weeks after the paracentesis) it had reached 27 inches, and there were at least three pints of fluid in the abdominal cavity. After continuing this treatment for ten days the measurement was reduced to 25 inches; three weeks later

\* 'Clin. Trans.', vol. i, p. 117.

it fell to 23½ inches. The improvement and recovery seemed owing to the copaiba, though it did not manifestly increase the renal secretion.\* Cases of recovery are recorded as due to the combined effect of copaiba, quinine, and iron,† and others to the influence of copaiba alone acting as a diuretic.‡

What therefore will be said concerning the equally satisfactory result in the present case when copaiba failed and active purgation was substituted? Before elaterium was commenced the abdomen was getting larger, and fluid (notwithstanding the tapping) was slowly reaccumulating in the cavity of the peritoneum. At the time the patient was discharged (although the circumference of the abdomen was the same as on admission) it was softer and less bulging at the umbilicus, and the general health and activity had in a great measure returned. It is not enough for us to know that the case recovered; we want to ascertain (and here is the difficulty) what share the treatment had in bringing it about. To determine this question is most perplexing, since cases of ascites, the nature of which appears similar, yield to different modes of treatment. Ascites is a formidable disease because the condition on which it usually depends is irremediable, and a very large proportion of the cases die. It is scarcely enough to say that because absorption of the ascitic fluid follows the plan of treatment adopted that the disease is cured. The fluid may have disappeared to return at no distant date. It is enough to say that we do not expect recovery in a case of ascites depending on cirrhosis or cancer of the liver, or on that morbid condition of the peritoneum arising from mesenteric disease, or tubercle and some other states. I have elsewhere expressed the opinion that ascites may possibly be the consequence of simple anaemia, and that these are the cases in which recovery may be looked for under a tonic plan of treatment. Dr. Bristowe has related cases of ascites cured by tonics,§ and among them a successful case in a boy, eight or nine years of age, whose ascites seemed to depend on chronic tubercular peritonitis.|| As diuretics, diaphoretics, hydragogue cathartics, &c. have failed over and over again, it seems rational to turn to drugs of an opposite character.

There is nothing we know of in the therapeutic action of quinine

\* 'Clin. Trans.', vol. x, p. 160.

† Ibid., vol. iii, p. 27.

§ 'Clin. Trans.', vol. ii, p. 12.

‡ P. 30.

|| Ibid., p. 30.

and iron to cure abdominal dropsy. It would appear that these remedies may in some simple cases effect recovery, but that they have no permanent influence for good over cases that depend on structural change in the liver, or peritoneum, or disease of the heart or kidneys. Cases of ascites depending on enlarged liver, have been recorded as recovering under tonic treatment after tapping. Even now there is not sufficient evidence to enable us to approach the question of treatment after any definite plan, and this is probably due to the fact that we frequently fail to ascertain the precise cause of the dropsy. Under a given line of treatment, a case terminates successfully, but that does not help us much in determining the cause of cure. Before we can ascribe the cure to this or to that remedy, we must have many cases yield to the same plan of treatment. Experience makes us sceptical in the use of drugs, and isolated cases of cure, where any particular prescription is followed, are perfectly valueless from a therapeutical point of view. One step towards an explanation of recovery, in simple cases, is to be sought in the fact that so long as the fluid remains distending the abdomen, it interferes with the functions of other organs, almost in the same way as a large accumulation of fluid in the pleura diminishes lung expansion, and displaces the heart, if the effusion be on the left side. From this, and some other cases that have come under my own observation, I am persuaded that serious consequences may ensue from excessive dilatation of the abdomen from fluid, when the operation of tapping is delayed, instead of being had recourse to as soon as the fluid resists absorption. A strain is then taken off the vessels, the kidneys act more freely, and the disease yields to drugs, which before had no effect. When, therefore, the distension of the abdominal cavity threatens to become great and one drug after another has failed, the fluid should be removed by tapping. As long as the distension continues the child's health suffers from interference with digestion, respiration, and so forth; the kidneys fail to perform their proper office of elimination, and there is loss of flesh and strength. In some simple cases of unilocular ovarian cyst, a single tapping is followed by permanent recovery, and instances are to be met with in which serous sacs distended with fluid have been cured by the same proceeding.

Mr. E. OWEN suggested that the case was analogous to hydrocele.

Dr. ROUTH had met with cases of ascites dependent on fecal accumulation.

Dr. R. LEE alluded to the transitory enlargement of the abdominal glands in children apart from tuberculosis, and depending on slight intestinal derangement. In scrofulous children such enlargement might become permanent. In other cases, the temporary obstruction to the portal circulation from pressure by these glands passed away under rest and proper diet. In Dr. Day's case, however, active interference was necessary.

Dr. EWART said the glandular condition would not account for the effusion, though it might explain the slowness of absorption. The greater number of cases of ascites were due to portal obstruction; in children, from a condition of subacute cirrhosis, frequently associated with rickets; often from tuberculosis of the liver. Mercurial treatment and purgatives were of most avail in such cases.

Dr. DAY, in reply, did not think the ascites in his own case was due to glandular or to portal affection, but to debility or some constitutional condition; and, in fact, was analogous to hydrocele. Cases which recovered under mercurials and purgatives were usually of this class.

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March 5th, 1883.

## TWO CASES ILLUSTRATING THE SUCCESSFUL EMPLOYMENT OF THE COLD DOUCHE.

By W. H. BROADBENT, M.D.

CASE 1. *Delirium Tremens*.—The patient was a gentleman aged about thirty-eight. His constitution was thoroughly broken by excesses, especially alcoholic, and he had had several previous attacks of delirium tremens. He had been under my care in one of these in November, 1876, which had been ushered in by severe haemoptysis followed by violent convulsions; and the case had been remarkable from the fact that the characteristic delirium and tremor returned several times after a long sleep and complete recovery of the mental faculties. The first treatment was by digitalis and bromides, no alcohol being allowed, but beef tea being given freely. In four days there was sound sleep, out of which the patient woke apparently well. The symptoms, however, gradually returned, and on the third day he was as bad as ever. The bromides and digitalis were again given, brandy being now added to the beef tea, on the supposition that the relapse might have been due to absence of stimulants when

the patient's strength was reduced by loss of blood. There was little apparent improvement, and chloral was given with the bromide, when at length sleep was procured. A relapse followed even more promptly than before, upon which morphia was administered subcutaneously, in doses of half a grain. Again sleep was obtained, with apparent recovery, but all the symptoms returned, and twice more was this recovery under morphia and subsequent relapse repeated. I now took advantage of the first moment when such a proceeding could be considered safe, and took the patient out with me. I made him name all the streets we passed through, kept his attention occupied, and when I had to make a visit told the coachman to keep moving, so that he could not leave the carriage. He always had a story to tell when I rejoined him of two women who had been with him "fighting like the devil," and in his imagination we ran over and killed scores of children. However, he slept after the drive, and afterwards he was sent out daily with the nurse in a carriage till he was quite well. I was called to him again on Dec. 6th, 1878, and found him suffering from severe delirium tremens, which had been carried on for some days. He was well plied with beef tea, had digitalis and bromides in full doses, and, finally, with great reluctance, morphia in grain doses subcutaneously, without effect. On the night of the 9th he was in a condition of extreme exhaustion, the face pale and haggard, the eyes wild, the skin bathed in perspiration, the pulse soft and small, frequent and irregular. He was almost too feeble to turn his head to follow the images of his fantasy, but was constantly muttering and exclaiming, while his fingers fidgeted with the bedclothes, and every limb, or almost every muscle, was the seat of jactitations. Dr. W. A. Smith, now of Newport, Essex, remained with him all night, and on the morning of the 10th reported that there had been no sleep and no cessation of the mutterings and jerkings, and that two or three times he thought the patient was dying, the pulse having become imperceptible, the countenance livid, and the voice almost inaudible. It was obvious that the nervous system would not respond to drugs of any kind, and that unless it could be roused by some means or other the patient had not many hours to live. I resolved, therefore, to try the douche. Ice-cold water was brought, and a large bath sponge; the patient was stripped to the waist, arrangements were made to protect the bedclothes, and then the sponge, as full of water as possible, was violently dashed against the head, face, neck, and chest. This was

done two or three times, the skin being quickly and roughly rubbed dry between with a coarse towel. I will not attempt to describe the gasping and sputtering and impotent swearing. The process was repeated on the back, and the patient then being made comfortable was told to close his eyes and to go to sleep, my hand being firmly placed upon his. This he did at once, but in about five minutes he awoke, apparently disturbed by the jactitations, which continued to be violent. He was obviously better, the pulse more full, firm, and regular, while the face had warmth and colour. During the few minutes of sleep the perspiration could be seen to form drops on his forehead, and roll off almost in a stream. He could not be made to go off to sleep again, and as his agitation increased, and he employed his renewed strength in struggling and shouting, the douche was again administered as freely as before, and he was afterwards commanded to keep his eyes shut, and go to sleep as before. He obeyed, sleep came almost instantaneously, and, in spite of the jerking of the muscles, lasted three hours. On waking up this time he asked where the doctor had got that water from, and was there any more like it. If there was he would have it used again. Used it was by Dr. Smith energetically, after which the patient slept continuously for twenty-four hours, only waking to take food. Convalescence followed quickly and satisfactorily. Delirium tremens seems to have gone out of fashion, and I have not seen a case since this.

CASE 2. *Sleeplessness and Pyrexia after Childbirth*.—I was called on the evening of June 3rd, 1881, to see a young married lady who on May 30th had been confined of her first child. The labour had been prolonged and severe, the perineum had been ruptured, and the bladder paralysed. From the setting in of labour, and it was said from a day or two before, there had been no sleep whatever. I was detained and did not reach the patient's house till 11.30 p.m. She was under the care of Mr. Ord of Streatham Hill, whom I met in consultation, and who gave me the above account of the case. Besides the sleeplessness there were pyrexia and severe abdominal pain with great tenderness in the left iliac fossa. The temperature on the previous evening had been 104·5°, on the morning of the day on which I saw her 104°, and at the time of my visit it stood at 104·2°. The patient complained of severe pain in the head, was restless and tossing herself about in bed, the face flushed, the eyes bright, the expression wild and anxious, the skin perspiring every-

where, the pulse 120, and the milk suppressed. On examining the abdomen it was found to be full and large, but not tense, and the respiratory movements of its walls were not arrested. There was great tenderness over the left iliac fossa, but it was complained of on slight contact and superficial pressure, and not much increased by deep pressure. Opium had been given in various forms, and bromides, and, as need scarcely be said, all the precautions against septic infection of the perineal wound had been taken. In deciding to recommend the employment of the douche I concluded that the abdominal respiratory movement excluded peritonitis, while the character of the pyrexia was not that of puerperal fever or septicaemia; the local tenderness again, in the left iliac fossa, was not accompanied by any tumefaction suggestive of pelvic cellulitis or ovaritis, and, as has been already said, it was remarkably superficial. It seemed, therefore, that the pyrexia and the sleeplessness were what we had to deal with, and that if they could be overcome there was every reason to expect that the patient would do well, while it was obvious, on the other hand, that persistence of a temperature of 104°, with entire absence of sleep, was attended with grave peril. It was agreed that she should be sponged all over with tepid vinegar and water, and that to the head, chest, and back the cold douche should be applied in the way described in the previous case. These measures were carried out; and, as I was informed by Mr. Ord, the patient speedily fell into a calm sleep, the pain in the iliac fossa subsided, and the temperature fell. There was no further complication, and satisfactory convalescence followed.

Sir JOSEPH FAYREB said that these cases recalled to his recollection a day in the month in May some years ago, when troops landed in Rangoon, under a burning sun, in scarlet coats, buttoned, with black leather stocks, &c. Seeing mischief before him, he took possession of a Burmese monastery, built of teak, and cleared it out for a hospital. In three hours he had from eighty to one hundred men lying in the verandah, struck down by the sun. Two had been bled; these two died. Some of the remainder were livid and breathing sterterously. In each case he applied the cold douche to the head, chest, and body; and all recovered. He had used the douche frequently at later periods in India, and found it generally successful. In the affections produced by the hot damp atmosphere,—he would not call it “sunstroke,”—the effect of the douche was marked; but its application must not be prolonged to the point of depression. In all cases of pyrexia it was of service.

Dr. DE HAVILLAND HALL mentioned a case in which the douche was applied to the extreme to which Sir Joseph Fayrer had pointed a warning. The man in question never rallied, and died.

Sir JOSEPH FAYREB added that if the cold douche failed, he had often used flagellation with a native broom to the soles of the feet.

Dr. CULLIMORE had seen cases of sunstroke in India, marked by head symptoms, in which he had used the douche to the head alone, while the body was immersed in a tepid bath; depression was thus obviated.

Dr. ROUTH had found digitalis produce fatal depression in delirium tremens; he quoted two cases. He had used the douche with success in the way described by the last speaker on children suffering from hydrocephalus. He asked upon what indications Dr. Broadbent had administered the douche in his second case? From the symptoms, he concluded peritonitis was present, but inflammation would not contraindicate the use of cold water. Was the cold douche of service in sleeplessness from overwork?

Dr. WYNN WILLIAMS had used cold in hydrocephalus, placing the child on a table and suspending a vessel of water having a piece of lint dripping water on the head.

Dr. GILBERT SMITH thought Dr. Williams's remarks referred to a different application of cold to that of the douche. He presumed it was to raise the temperature of the skin, to stimulate the cutaneous circulation and to withdraw blood from the inner organs, that Dr. Broadbent applied the cold douche.

Dr. ALTHAUS thought the cold douche acted best in cases where the nerve-centres of the medulla oblongata were in temporary abeyance. These it was calculated to stimulate. He thought this was the rationale of the treatment.

Dr. HERON asked if sleeplessness were not itself an indication for the use of the cold douche. He himself suffered from insomnia, and found that a cold bath was the best means of relieving it. As to Case 2, did Dr. Broadbent think that a relapse of delirium tremens ever occurred after cutting off stimulants?

Mr. SAMUEL BENTON found that his cases of delirium tremens did well, as a rule, under abstention from liquor, good food, and occasionally chloral. Cases not amenable to this treatment he found usually recovered under the use of the cold shower bath.

Dr. BROADBENT, in reply, said that he had employed the douche in order to rouse the nervous system by shock. He had read Sir Joseph Fayrer's cases with much interest when they were published. His doses of digitalis were full doses in the ordinary sense. The general use of cold, as alluded to by Dr. Williams, was not analogous to his use of the douche. He thought that there was no peritonitis in the second case, and the sequel seemed to confirm his opinion. There was no arrest of abdominal movement. The protracted sleeplessness was his indication for the douche in the second case. He considered the pyrexia was due to the sleeplessness. His own experience of insomnia coincided with Dr. Heron's. He had found much benefit from cold application, especially from standing in a cold bath if the feet were constantly cold. He did not hold the view of special temperature and vasomotor centres in the medulla, though centres for the respiratory functions and for the heart certainly existed there.

*March 12th, 1883.*

INTRODUCTORY ADDRESS

By the PRESIDENT,

Sir JOSEPH FAYRER, K.C.S.I., M.D., F.R.S.

GENTLEMEN,—I think it would hardly be possible for any one who had studied the past history and traditions of this the most ancient medical society in London—now commencing the 111th year of its existence—or who was at all familiar with the long roll of names of distinguished men who, as presidents, have directed its progress until it has attained the high position which it now occupies—to contemplate the prospect of seeing his own name added to that list, without feeling—however much he might be gratified by the distinction—some misgiving as to the wisdom of the choice, and as to his own fitness for an office of such grave responsibility. This indeed is my case, and all I can say, in acknowledging the great honour you have conferred on me, is that, in deference to your wishes, having accepted an office for which personally I feel that I have small claim and less aptitude, I will endeavour to justify your election, and try at least to deserve, if I may not command, success. I cannot call myself altogether a stranger here, for I have received at your hands signal proof that you have not so regarded me; but am well aware that, coming among you as I did but ten years ago at a comparatively late period of life, I am after all but a junior member, and am sensible that my opportunities of serving the Society—albeit you have permitted me to fill certain of its offices—have been neither so frequent nor so favorable as I could have wished, though I claim, in common with the oldest members, a thorough appreciation of its utility, a deep interest in, and a sincere desire for, the promotion of its prosperity. It was the first society into which I was admitted when I returned after long absence in the East, and to it my first contribution, in the form of a paper on some subject connected with disease, was made. I shall not readily forget the kindness with which I was received, nor the encouragement I derived from the courteous interest evinced by those to whom I had the privilege of speaking. Let me thank you heartily for all this, and for the confidence you have placed in me.

To one, trained and accustomed as I had been during a long pro-

fessional life, to deal with disease, accident, or emergency in every form in which they present themselves to a military medical officer, especially to a member of that service in India, where of necessity speciality is unknown, and where whatever comes within the legitimate domain of physic, as well as much that lies outside it, or appertains to other departments of science,—falls within the sphere of his duties,—a society constituted as this is of representatives of every department into which the division of labour rendered necessary by the exigencies of a great metropolitan population has ordered and arranged our profession of medicine, whether as physician, surgeon, or member of that large and important class who, in general practice, are *καὶ ἔξοχοι* the medical men of our country, commended itself to my warmest sympathy; and I have had no reason to modify the opinion I then formed of it; for not only have I heard many varied and important subjects discussed, but can honestly say that I have never left one of the meetings without carrying away some useful addition to such knowledge as I already possessed.

The friendly sociable spirit in which the work is carried on, and the keen, practical, yet always unacrimonious character of the discussions have impressed me, and many others, with a high sense of the utility, value, and importance of the proceedings. I can but tender my assurance that, as far as lies in my power, I will do my best to maintain the same desirable mode of procedure at our meetings, and trust, with your aid, in due time, to hand over the office to my successor, with the Society in a no less prosperous condition than that in which I received it from the accomplished surgeon, to whose courteous, able, and discriminating discharge of his presidential duties I venture to pay a tribute of respectful admiration, feeling, at the same time, very conscious how difficult I shall find it to fill the place he has vacated; and, gentlemen, let me remind you that even his efforts could only have availed when supported by you, and that I am no less dependent than he was on your countenance and encouragement. About this, however, I feel but little anxiety, for I know that these have always been freely accorded. Let me then only trust that you will be as generous and forbearing to me as you have been to my predecessor, and that you will overlook the shortcomings which are inevitable in one imperfectly qualified as I am for the duties of the office which you have called on me to perform.

Fortunately for you and me, this is not an occasion on which to inflict on you a long address ; but as it is the custom for a new President to inaugurate the tenure of his office by a few introductory remarks I shall venture to occupy your time for a few minutes ; but will make my remarks brief and quite of a general character, for there is other and much more important matter for you to consider this evening.

First, let me congratulate you on the prosperous state of the Society ; which now numbers 420 Fellows, being an increase of 54 in the last five years, the unprecedented number of 47 Fellows having been added during the past twelve months ; each year in fact showing that the list is increasing.

The financial condition, though we do not abound in wealth, is satisfactory. The Treasurer is able to show a satisfactory balance in hand (of over £200).

As you are doubtless aware, important changes are being made in the internal arrangement of our premises. A new and larger meeting room and library are being constructed, and there is good reason to hope that these, with a new lavatory, and other conveniences, and new Registrar's apartments, will be ready for occupation by the time we reassemble in October next. Let us hope that many interesting papers and discussions in the new meeting room, and many valuable additions to the shelves of the new library will signalise the year in which they are inaugurated.

These important changes, as you will understand, have trenchéd heavily on the funds of the Society, and will involve an outlay of about £4000. But you will be gratified to learn that an old and valued friend and former President has, with the munificence which has made his name familiar as a household word, come forward to our aid in a most generous and liberal manner, for which the Society, like many other institutions which have a philanthropic object, owe him much gratitude. It will also be satisfactory to you to be assured that the pecuniary liability is covered by a mortgage on the sixty years' lease already promised on completion of the premises, and that the rents from subletting will more than cover interest and rent.

The object of this Society, if I understand it rightly, is of a very catholic character. It is to collect, collate, compare and discuss matters of practical interest relating to any or all of the morbid conditions to which flesh is heir—it seeks to discover and make

known whatever can aid in ameliorating or mitigating, when we cannot avert or cure disease, but is not less concerned with prevention than with treatment. Limiting itself to no speciality; medical, surgical, obstetrical, pathological, therapeutic, etiological, psychological, or sanitary questions, all afford welcome subjects for discussion—the sole condition being that they shall be treated in a scientific and practical spirit, to the end that they may contribute to the good of man and the advancement of rational medicine. I ask you to continue to maintain and develop this high aim, and in this spirit to give as much time as you can spare to work which commends itself, not because it conduces to the benefit of individuals but to the good of all; for it is by comparing and discussing your varied views and experiences that hasty generalisations will be avoided and medicine will be advanced on a sound, rational, and scientific basis. The records abundantly prove that the Fellows of this Society have so dealt with it in the past, whilst the papers read and discussed during the last session bear ample testimony to the ever increasing energy and value of the work that is being done. I need only remind you of some of the papers of the session, for example, those by Mr. Mason, Dr. Stephen Mackenzie, Mr. Bryant, Mr. Pearce Gould (our new Secretary), Mr. Lund, Dr. Thorowgood, Mr. Gamgee, Dr. Richardson, Dr. Routh, Dr. Braxton Hicks, Dr. Symes Thompson, or the Lettsomian Lectures, to which I cannot refer without expressing admiration of the philosophical and masterly treatment of an important subject, which Dr. Sansom made clear and interesting as it was practical and original. No name among the Lettsomian lecturers will stand out more prominently than that of this learned physician to whom a well merited vote of thanks was so gracefully proposed and so cordially accorded. Gentlemen, I do not venture to dictate; but let me remind you how many subjects of great practical interest still wait further elucidation; and it seems to me that it especially behoves our Society to investigate and to see how far they may be made useful in our daily professional avocations, and be assimilated into medical practice.

Among such subjects, I may mention the very prominent question of the causal relations of minute organisms to disease. This has already engaged your attention on the occasions of the interesting papers and remarks of Drs. Whipham, Williams, Green, Heron, and others, and the beautiful demonstrations of Dr. Heneage Gibbes on

the bacillus of tubercle, in which the relation of that microphyte to the disease was discussed. I hope it may again come before you, for it is unquestionably a subject of vital importance, not only as regards the etiology and propagation of tuberculosis, about which much still remains to be said, but because other diseases such as malarial fevers and even cholera are by some ascribed to a similar cause. Indeed it would almost appear as if all disease is to be associated with a micro-organism of some form, which, though by some regarded rather as an accessory or epiphénoménon, by others is held to be the very cause itself.

It is very satisfactory to know that many able observers are engaged in the investigation of a subject so momentous, and that not a few are Fellows of this Society. For my own part, fully recognising the importance of the discovery of these germs, and most earnestly advocating a patient and persistent prosecution of the study of their life-history, convinced that they play an important part in the etiology and genesis of many diseases, I think we are hardly yet in a position to say what that part is, and must admit that the true interpretation of the relations of these microbes to disease has yet to be determined.

Again, the cognate subject, considered in its surgical aspects, is of vast interest and importance.

The antiseptic method of treatment has revolutionised the practice of surgery. Surgeons from all parts of the world have borne testimony to its value, and to the fact that operations, formerly impossible, may now be done with impunity. Yet hardly has it become an established mode of practice, than its value (admitted by many even who decline to accept the rationale propounded by its distinguished advocate) is called in question, and doubts are thrown on it by men of high authority and experience, who declare it to be little better than a delusion, whilst they roundly assert that equally good results may be obtained without it, and that care and cleanliness are due the benefits assigned to the antiseptic; by them the carbolic spray and the bacteria are alike rejected or ignored. Can we do nothing to decide such a question, and to ascertain the real state of the case? Of the facts there would seem to be little doubt, though the rationale of their production is disputed. Or turning to a field of work in which I have taken much interest, I might suggest for consideration such questions as those so ably dealt with by Lewis, Manson, Bancroft, Sonsino,

Cobbold, Mackenzie, Harley, and others, in India, China, Australia, Egypt and other parts of Africa, as well as here and elsewhere, in regard to the parasitic origin of a group of diseases hitherto ascribed to other causes; or to the important question of the etiology of fevers, especially in tropical and subtropical climates, which is by no means conclusively settled there—I venture to question even if it be so *here*. Or the influence of climate, heat, malaria—whatever that may be—and of organic and inorganic miasma, whether animal, vegetable, or gaseous, or of dynamic agencies operating through the nerve centres and vaso-motor apparatus, in producing certain diseases, or in influencing their propagation and diffusion; questions on the causation and diffusion of cholera, dysentery; questions in relation to hepatic disease, and to various forms of anaemia or cachexia, with their train of evil results to the nervous, vascular, and visceral arrangements, their dependance on climatic and malarial influences, which, with our ever extending communication with foreign countries, are daily becoming subjects of increasing interest, considering the numbers of persons who returning to this country affected by tropical disease in its chronic forms and sequelæ, must be constantly looking to you for relief from sufferings which change of climate alone has failed to effect.

Again, the true value of alcohol, whether therapeutic or dietetic, is still open to debate, and is a point on which a variety of opinions are held. Cannot more definite and settled views be arrived at on a subject of such vast importance about which reactionary opinions are largely influencing the whole nation? Or to turn to more specific matter, such for example as the histogenesis, pathology, treatment, and prognosis of morbid growths ranging from the simplest excrescence to the most flagrant carcinoma; how much has still to be learned, how many deeply interesting questions are to be answered. Many other subjects will suggest themselves to you affording fertile matter for consideration and discussion which does so much to extend and consolidate practical knowledge—that which avails us in the presence of actual disease, and gives confidence in diagnosis and reliance on treatment—which, after all, is the great object of our science and our art. Now I believe we are all quite alive to the importance of treating these matters in a practical way, whilst we fully recognise, at the same time, that the strictest principles of scientific induction should guide our reasoning in regard to them. But if there be a place in which the study of applied

science is appropriate, that place is the Medical Society whose object is the prevention, diagnosis, and treatment of disease. Here let me suggest that our investigations need not necessarily be limited to rare, or what are commonly called *interesting* cases or pathological curiosities. There are cases apparently simple and at first sight of little interest, such as you might hesitate to bring before the Society, though they have puzzled even an experienced observer and remain to a great extent unexplained—cases occurring in the daily routine of professional experience about which discussion and comparison of notes would be of infinite value in clearing away doubts and ascertaining what others know about the matter. I invite you to bring such cases here, for out of them perhaps some important issue may arise by which light may be thrown, which may lead to practical deductions of greater value than the study of more abstruse pathological or therapeutical problems might afford. I could hardly illustrate what I mean better, than by referring you to the last paper read here, on the use of the cold douche in the treatment of what is unhappily not an uncommon form of disease. I think all will admit that Dr. Broadbent invested it with great interest, and made it very instructive.

Such, it appears to me, is the work that has been going on here for more than 100 years, and such I hope it will continue to be during the years to come, ever improving and extending as the circle of science is growing larger. I venture to hope that, with your help, our able secretaries will in due time produce fresh contributions to the literature of medicine in the biennial volumes of 'Transactions.' To these let us hope the younger Fellows will contribute of their rapidly advancing science; the seniors of that too, but also of their experience; for from these, and from the discussions they elicit, I know we may look forward to much that will be profitable wherever the 'Transactions' circulate and there are members of our profession to read them.

For my own part, I look forward with pleasure to the coming year, in hopeful anticipation that, with your support, we may do much good, and that I may be able to occupy this chair with benefit to the Society.

## A CASE OF POISONING BY CITRATE OF CAFFEINE; RECOVERY.

By CHARLES H. F. ROUTH, M.D.

A PATIENT of mine, aged sixty-three, had been under my care for some time. He was a very sober but very weakly man, very nervous, but of very good spirits notwithstanding. He had been ailing a good deal for the last two years with headache, especially at the back of the head and round the right orbital region. There was also occasionally severe chestache, which appeared to impede his breathing sometimes; and severe backache, not interfering with his movements, but referred to the region of the kidney. Several remedies were tried—alkalies, iodide of potassium, salicine and salicylates, hydrochlorate of ammonia, bromides, guarana, blisters behind the ears, pediluvia, &c. He continued under my care from Jan. 3rd up to Feb. 20th, and was much better and stronger. There was no disease of the heart, but it was very weak in its action. The urine was normal and free from albumen; sp. gr. 1025. On Feb. 20th, as my patient did not improve as readily as I wished, I ordered him to take one drachm of citrate of caffeine three times a day, and a sleeping draught at night. I meant Bishop's granular effervescent citrate, the only medicinal preparation in vogue. Unhappily I did not specify this exactly, never doing so, and having always received this preparation when ordering it simply as citrate of caffeine. But unfortunately, also, the chemist who made it up supplied the ordinary citrate of caffeine pure and simple. My patient took one powder at 4 p.m.—*i.e.* a whole drachm. Symptoms followed immediately. Burning in the throat and gullet, succeeded by giddiness, faintness, nausea, numbness, and tremors of the extremities; pain and tenderness of the bowels and stomach; great thirst; dry tongue. At 4.45 he was violently sick, with vomiting of digested matters; and there was also violent purging. Much urine was also passed. The sickness and vomiting recurred at 5.45. On leaving the closet he could scarcely walk, and had to be assisted. These vomited matters consisted also of digested substance. I was absent at the time, and having ascertained that it was the pure citrate that the chemist had

supplied (for a powder was brought to me), I managed to get to my patient at 6 p.m. He was then collapsed; pulse hardly perceptible, irregular, 120; skin cold and clammy; all his senses perfectly intact, not even headache; sensibility of the skin nowhere impaired, a symptom not presented throughout the case. I at once administered half an ounce of ipecacuanha wine. In about a quarter of an hour he was very sick. I now administered two tumblers of lukewarm water, and waiting another twenty minutes and no sickness resulting, I again gave two teaspoonfuls of ipecacuanha wine, and made him sick by passing my finger down his throat. He soon felt a little better, and I now gave him one drachm of animal charcoal with ammonia, and two and a half drops of nitrite of amyl. He rallied a little; so placing him near the fire, I left him for a few minutes. My son, Dr. Amand Routh, soon arrived to take my place at 7.30. The patient in the meanwhile had been very sick, and had vomited all or the greater part of the charcoal.

7.30.—Condition as before; hands and feet icy cold; muscular tremors in hands and feet; cardiac oppression, sense of impending death. Pupils equal, not dilated, indeed rather contracted. Some lumbar pain and tenderness, some aching about the masseter muscles. Ordered sinapism to heart; to put his feet in hot water; ammonia, alcohol, and nitro-glycerine. 10 p.m.—Debility and depression of spirits, as before. Pulse rather firmer, hands and feet warm; lumbar pain worse; no urine passed. Taking greasy mutton broth at frequent intervals, and half an ounce of brandy every four hours. Throat feels very sore, and he has a burning sensation down the œsophagus. Organs of sense have been throughout unaffected, and the head is free from pain. To continue one drop of nitro-glycerine solution every two hours. The patient continued to improve till 1.30 a.m. of the 21st, when I left him. I saw him with my son the next morning. He still complained of feeling very ill, but he was certainly not so weak; his pulse was stronger, but the top of the head was very painful; he had urinated freely. The right orbital region was also very painful. Nitro-glycerine was continued; no sickness; he took milk and soda-water freely. Cold to the head to relieve pain. As he complained still of a burning sensation in the mouth, I ordered ice, but this producing intense abdominal pain, it was stopped. The diluent drinks with raw beef-juice were freely taken. Later the headache and the pain in the back increased, both of which were relieved by mustard poultices. Later, I substi-

tuted digitalis for the nitro-glycerine. From this time he improved. The prostration gave way, and he complained mainly of the pain in the back. On February 24th the pulse was 80, not over-strong; urine, specific gravity 1025, no albumen, doubtfully a trace of sugar. Lumbar pain relieved by pressure, only muscular, no headache. Food mainly bread and bread-and-milk, with brandy and soda-water.

In sum, the symptoms were those of a vegetable and depressant irritant. But for the violent sickness, I think the dose would have been fatal, especially with so weak a man. It is, I believe, the only case on record of poisoning in the human subject by caffeine, and as such is, I think, worthy of record. I am, perhaps, to blame for not having written more precisely the drug meant; but the chemist who supplied it, I think, was equally to blame for not knowing that pure caffeine in these large doses would necessarily act as a poison. It is usually said convulsions occur in these cases. Here nothing worse was observed than muscular tremors. It may be worthy of remark that the mind was and has continued unaffected throughout. This case is also instructive as showing what a very powerful agent we possess as a nervous medicine in caffeine, if it be used in proper medicinal doses.

The PRESIDENT did not know of any similar case in man. Experiments had shown that the citrate of caffeine stimulated involuntary muscles. In rodents it was only slowly fatal. It resembled theine and the alkaloid of coca and Paraguay tea in increasing the power of muscular effort.

Dr. THOROWGOOD had found the drug useful in cases of asthma. In a severe case he treated two years ago, a threatened attack of asthma passed off after one dose (one grain) of the citrate of caffeine had been taken, but extreme faintness speedily set in. Later Dr. Thorowgood found that the attacks were due to cardiac disease, and the patient died eventually in syncope, so that the former syncopal attack was probably not due to the caffeine. He had seen no evidence of the tetanising effects on the heart attributed to this alkaloid.

Dr. GILBART SMITH would have preferred a less depressing emetic than ipecacuanha in such a case. He had given citrate of caffeine in cases of cardiac and renal disease, and in asthma, for which it was very useful. Caution was necessary in cardiac cases, for he had known severe collapse follow even small doses.

The PRESIDENT alluded to the value of strong coffee in opium poisoning, and the superiority of coffee to alcohol as a stimulant. Was caffeine, which is closely allied to quinine in having very little carbon, concerned in this action of coffee? Did Dr. Routh observe whether the paralysis passed into a tetanic condition as seen in animals?

Dr. ROUTH was aware of the experiments referred to and others in

which theine was used. There were no convulsions, but only marked muscular tremors; and there was paralysis, but no tetanus. He feared to give sulphate of zinc or copper.

## THE DIFFUSION OF MEDICINAL AGENTS IN THE ATMOSPHERE.

By ROBERT J. LEE, M.D.

DR. LEE remarked that the principles on which antiseptic surgery was founded might be extended to the treatment of pulmonary diseases, provided that the difference between diffusion in a vapour and a fluid was kept in view. In the volatilisation of any antiseptic or medicinal agent it was necessary that the water with which it was mixed should be evaporated, and no practical use resulted from simply mixing the substance with hot water and inhaling the steam. Dr. Lee stated that the rate of volatilisation of any substance when boiled with water depended on its own boiling-point, its specific gravity, and its readiness to mix with water. In the case of the oil of the eucalyptus globulus, by mixing alcohol with it the rate of evaporation could be controlled, for though its boiling-point was 320°, its specific gravity was less than that of water, and it volatilised when mixed with it much more rapidly than the water. Carbolic acid had the singular property of volatilising almost in the same proportion as the water with which it was mixed, and thus it was the most suitable for all antiseptic methods of treatment.

Dr. CULLIMORE spoke of the value of sending patients to places where the air was naturally charged with certain emanations. In Iceland freedom from phthisis might be due to the sulphur in the air.

Dr. DAWTRY DREWITT asked Dr. Lee if he was quite sure that acetic acid was not volatilised when mixed with boiling water.

The PRESIDENT pointed to the fact that the air of London was permeated by sulphurous acid.

Dr. LEE, in reply, pointed out that burning was not volatilisation, but destruction.

*March 19th, 1883.*

## BIGELOW'S OPERATION FOR A FOREIGN BODY IN THE MALE BLADDER.

By HUGH SMITH, F.R.C.S.

A SUFFOLK farmer, thirty-nine years of age, was admitted into King's College Hospital on Dec. 11th, 1882, with symptoms of stone in the bladder. On Dec. 16th lithotripsy was performed ; the calculus was easily friable, but it choked the blades of the lithotrite. Bigelow's evacuating apparatus was used, but at first it did not answer well. The lithotrite was reintroduced, and a piece of straw a little more than three inches in length was removed from the bladder. Bigelow's apparatus was again used, and several fragments were washed out. A few days later Mr. Henry Smith, with a light scoop lithotrite, removed another piece of straw, two inches and a half long. Several large fragments of stone were passed during micturition, some of them showing a distinct groove into which the foreign body fitted. Mr. W. Rose extracted some fair-sized fragments of calculus during Mr. Smith's absence, and shortly afterwards the patient was discharged well. In answer to questions, the patient said that he had passed a stalk of green grass down the urethra one day last summer, because he was suffering from retention of urine. He removed, as he thought, the whole of the grass passed ; but soon afterwards he noticed a prickling sensation in the bladder, and observed that his water looked like porter. Had Mr. Henry Smith known the above history before operating, he would have taken other means to remove the foreign body. A light scoop lithotrite would have been used instead of a large and powerful crushing instrument. Bigelow's apparatus would not have been employed owing to the probability of the eye of the catheter becoming blocked, as it undoubtedly was, by the tough ligulate of the foreign body.

Mr. PEACE GOULD exhibited one of Bigelow's latest Evacuators, and explained the several improvements introduced into it. He also showed the photograph of a stone weighing 1380 grains which had been removed by lithotomy at a single sitting by Professor Bigelow. He suggested that if Mr. Henry Smith had used one of the modern patterns of lithotrite he would not have had so much trouble from the clogging of the instrument.

The PRESIDENT was reminded of a case of stricture, where the patient,

in withdrawing a gum elastic catheter, which he had learnt to pass himself, left half of it behind. Sir Joseph Fayrer failed to extract it at the time, but a year later he removed by lithotomy a large phosphatic stone, which developed around the broken catheter. In India stone was remarkably prevalent, but in his days there lithotripsy was hardly known. Once when operating for stone, on putting his finger into the bladder, it was pricked, and on extracting the stone, a large needle was found transfixing it. He was unable to say how the needle entered the man's bladder.

### ENDERMIC HÆMOPTYSIS.

By DR. MANSON (of Amoy, China).

THE work of Bilharz, Griesinger, Cobbold, J. Harley, Sonsino, and others, has made us familiar with the parasitic affection of the urinary organs known as endemic hæmaturia. I propose to notice a disease of the lungs almost the exact counterpart of this of the urinary organs, and, following the example in the nomenclature of "endemic hæmaturia," I will call this new disease "endemic hæmoptysis."

The parallel that obtains between these two diseases is very remarkable. Endemic hæmaturia and endemic hæmoptysis are both of them caused by parasites; in both diseases the parasite is a species of distom. Both affections are characterised by an intermitting or remitting discharge of blood, and in each the ova of the parasites are to be found in this discharge. Both have a limited and probably well-defined geographical distribution, and both tend perhaps to shorten life either by profuse haemorrhage or the gradual sapping of health consequent on long-continued and frequently repeated small bleedings.

My acquaintance with endemic hæmoptysis dates from the middle of April, 1880. At that time I was practising in Amoy. For a purpose altogether unconnected with the subject of these remarks, I had for some time been in the habit of examining with the microscope the blood brought up from the lungs in all the cases of hæmoptysis I met with in native practice. On one occasion I was consulted by a Chinaman about a trifling skin disease. Whilst he was describing to me his symptoms he was seized with a fit of coughing, and brought up a small quantity of blood-tinged sputum. I transferred a small portion of the sputum to a glass slide and examined it with the microscope. I found plenty of blood and

mucous corpuscles, epithelium, and so forth, and in addition to these I observed certain large bodies such as I had never met with before, and which I suspected, from their appearance, were the ova of a parasite. These bodies were in great abundance, some three or four of them in nearly every field. They were oval, dark reddish-brown, double outlined, operculated at the broader end, and contained one or more paler spheres suspended in a granular matrix. There was some diversity both in size and shape. Some were more spherical; others, again, more elongated. On an average they measured  $\frac{3}{16}$  in. by  $\frac{5}{16}$  in. These bodies were undoubtedly ova; but, thinking they might have been accidentally introduced into the man's mouth in his food, or possibly that there might be a parent worm about his mouth or throat, I examined his oral cavity very carefully. I found no trace of food or parasite, and when, on requesting him to cough again and expectorate, I found that he produced a second pellet of bloody sputum containing similar ova, I concluded that a parasite must reside somewhere below the vocal cords, probably in the lungs, and that I had stumbled on a new disease.

The man told me he was a native of Foochow, was thirty-five years of age, and was a secretary in a mandarin's office. He had been in Amoy about a year only. When twenty-one years old he went to Formosa, where he resided, with the exception of two or three visits to the mainland, for nearly ten years. It was during his residence in Formosa that his blood-spitting commenced—about a year after his arrival on the island. On his first attack he spat from half an ounce to an ounce of blood for nineteen days in succession. He emaciated slightly, but had very little cough. About six months later hæmoptysis returned—less profuse than on the former attack, but as on that occasion, the sputum at the outset was pure blood. This second attack lasted for a few days only, but ever since, he had suffered from periodical attacks of hæmoptysis of two or three days' duration, coming on every second or third month. He never had very much cough, nor had the hæmoptysis ever been very profuse, the blood after the first mouthful or two always being mixed with mucus. Once he had no attack whatever for two years. His general health was satisfactory. A careful physical examination failed to detect anything amiss with heart or lungs that could account for the hæmoptysis. His family history was fairly good; his mother, he said, died of some disease of which

cough was a symptom, but his father had never had any sign of chest disease, and his four brothers and sisters were alive and well.

Two days after the first visit this man called on me again, and, as on the first occasion, brought up by coughing abundance of ova-laden sputum. Although he promised to see me again he did not return, and for a time my attempts to investigate a new and interesting disease were baulked.

This man's case brought to my recollection that of a Portuguese, who had been my patient, suffering from aortic aneurism, during November and December, 1878. This man, like my Chinese patient, had long resided in Formosa; indeed he was only a visitor to Amoy when he came under my notice. He had been in bad health for some time, and a cold he caught so aggravated the dyspnoea he habitually suffered from that he was obliged to come to the hospital. Under iodide of potassium and rest his urgent symptoms subsided, and he got well enough to return to Formosa about the end of the year. In the following June he died from rupture of the aneurism into the pericardium.

Dr. Ringer, under whose care he had come, knowing I took an interest in the case, kindly sent me particulars of the post-mortem examination, and mentioned in his letter that on making a section of the lungs he encountered a parasite of some sort lying on the surface of his incision. Impressed with the great probability that a parasite of the same species that Dr. Ringer found in the lung of the Portuguese resided in the lungs of the Chinaman, and was the parent of the ova I found in such abundance in the sputa, I wrote to Dr. Ringer requesting him to send me the parasite, and in the sediment of the little bottle, in which it lay in spirits of wine, I had no difficulty in finding many ova corresponding exactly in size, shape, colour, and contents with those I had found in the Chinaman's sputa. This parasite from the lungs of the Portuguese was of the same species as that producing the ova in my Chinese patient.

As far as I know this is the only specimen of this parasite that has been found; it is a distom. The specimen in spirit, which had probably shrunk somewhat from its original size, measured half an inch in length by one sixth of an inch in breadth by about one third of an inch in thickness. It was quadrangular in shape, with the angles rounded off, of a bluish-grey colour, and of leathery consistence.

I sent it to Dr. Cobbold, who pronounced it to be a new species, and named it, after the discoverer, *Distoma Ringeri*.

The gist of these observations was published in the China Customs Medical Reports for the half year ended Sept. 30th, 1880. In the 'Lancet' of Oct. 2nd of the same year I read an abstract of a paper by Professor Baelz, of Tokio, Japan, which appeared to me to refer to the same subject. He described certain bodies found in the sputa of cases of hæmoptysis occurring in Japan. He considered these bodies to be a stage in the development of gregarinæ, and proposed to call the disease they were found in Gregarinosis pulmonum. I wrote the professor for specimens, and he very kindly sent me a small bottle from Japan containing characteristic sputum. Under the microscope I recognised the bodies he described, but they were in every respect identical with the ova associated with the solitary specimen of *Distoma Ringeri* I had examined, and with the bodies I found in such abundance in the sputa of my Chinese patient. I persisted in the examination of the sputa in every case of hæmoptysis turning up at the native hospital in Amoy. I examined over a hundred cases, but did not again encounter the ova in a single instance. My patients were all natives of Amoy or of the surrounding country. I suspected therefore that, like other distoms, the area of distribution of *Distoma Ringeri* was limited to certain districts, and that Amoy was not one of these. But I knew the parasite was to be found in Formosa. I therefore turned my attention to the natives of that island. On application to a friend residing in Formosa, I received two large bottles filled with sputa from two of his servants, which on examination were found to be crowded with distoma ova. In answer to a second appeal my friend sent his servants to Amoy to be under my immediate observation. The elder of these two men was a short, sturdily-built fellow thirty-one years of age. Until his visit to Amoy he had never been out of Formosa. His family, he said, was healthy. His father died of dropsy, aged fifty-eight, but his mother, three brothers, and four sisters were alive and well. His blood-spitting began about eleven years before I saw him. He was then working on the tea hills as an ordinary labourer. He observed that when he breathed hard during severe exertion cough came on, and with the cough expectoration of blood-tinged mucus. From that time he had been troubled with blood-spitting more or less constantly. It was always increased by violent exercise, and on one

occasion, whilst rowing in a boat, he suddenly brought up over a bowlful of pure blood. Occasionally, coughing and spitting would stop for a few days, perhaps for a month, but then they would return and occur daily for a month or two. I auscultated this man's chest very carefully, but failed to detect any physical sign of disease. His throat was remarkably well developed, and altogether, though rather thin, he seemed to be in robust health.

The other servant was a tall, thin, rather delicate looking young man, twenty-two years of age. Both his parents were dead : from what I could make out they died from some dropsical affection. He said he was quite strong till four years before the date of his visit to me ; then, and without any obvious cause, he began to cough and spit blood, especially after exertion. During one year he continued to spit blood almost daily ; about an ounce at a time. He then changed his employment to one in which less physical exertion was required. His hæmoptysis ceased and did not recur ; but the cough continued, and when I saw him, almost daily, especially on rising in the morning, he had attacks of coughing ending in the expectoration of quantities of yellow-brown muddy-looking tenacious mucus. He complained of some pain about the left nipple, but on auscultating him I failed to detect anything amiss with the lungs.

While these two men lived in my house I examined their sputa daily. By getting them to cough I could always procure abundance of ova-laden sputum. So numerous were these ova, that I could procure thousands of them any time I chose to send for my patients. The fit of coughing which occurred on rising in the morning was always the most productive.

These men told me that blood-spitting was a disease to which Formosans and immigrants to the island were especially liable. In some districts it was very prevalent. I had only to request my friends there to send me some, and usually by return steamer I received three or four specimens coming from different blood-splitters.

The constant or repeated small bleedings these parasites induce cannot fail in certain cases to produce in time a state of intense anaemia, rendering the subjects of it very liable to attacks of dangerous forms of other disease. But the *Distoma Ringeri*, in consequence of the position it occupies, the lungs, and the liability of these organs to great strains and congestion on exertion or coughing, undoubtedly exposes its host to the additional danger of sudden and profuse hemorrhage and the consequences, whatever these may

be, of infarction of the lung tissue by effused or suddenly inspired blood. I am not in a position to assign to this parasite its exact share among the causes of grave disease, but I have no doubt that in time it will be found to operate prejudicially on the populations of the countries in which it is endemic in the directions I have indicated.

I need not enlarge on the symptoms and diagnosis of endemic hæmoptysis, but there is a point having very practical bearings—viz. the way in which the parasite and the disease it induces spread from one human host to another. By observing the specimens of ova under the microscope, it will be seen that they contain no trace of embryo. The ova passed in cases of endemic hæmaturia are occupied by a well-developed ciliated embryo, which escapes very soon from the shell.

The ova of other well-known distoms also develop a ciliated embryo. The development of the embryo of *Distoma Ringeri* was therefore the first point I had to attain before an intelligent idea could be got as to how the parasite spreads. My two patients supplied me with abundance of material for experiment.

It is evident that the sputum is the natural medium for the escape of the ova from the human host—just as in the case of Bilharzia the urine is—or, in the case of the intestinal and liver parasites, the intestinal discharges are. By following the destinies of sputum, therefore, I thought I should be led to some knowledge of the development of the ova it contained. Seeing that the embryo was not at all developed, it was unlikely that the egg was immediately transferred to the body of the final, or, perhaps, of an intermediary host. As in other distoms, it was probable that there was a preliminary and ciliated stage in which the miniature parasite was free. When sputum is cast on the ground its destinies may be various. That which seemed to me the most conducive to the development of any ova it might contain was that it should be transferred by some agency, such as a shower of rain, to some pond, ditch, or well, where it might be incubated. I resolved to experiment in this direction. I placed specimens of distoma sputum in glasses, shook it up with filtered water, washed it daily for a week in fresh water, and then allowed the ova to settle quietly to the bottom of the vessel. In this way I fancied I imitated what must happen in nature. From day to day I examined ova thus treated with the microscope, and had the satisfaction of finding that a process of development led up

to the formation of an embryo. At the end of from four to six weeks nearly every ovum contained active ciliated embryos closely resembling in appearance and habits those of Bilharzia and other distoms. Ova of the same age which I had not thus treated with water, but which had been kept in sputum as originally expectorated for comparison, exhibited no signs of development, and resembled in every respect freshly procured specimens.

When ova thus treated approach maturity, they present a very striking and interesting appearance. The embryo they contain is a delicate heart-shaped ciliated organism endowed with prodigious activity, incessantly occupied in attempts to rupture a collar-like membrane which surrounds its anterior extremity, and to force open the operculum of its shell. In time it accomplishes this, and by continued efforts, which can best be described as frantic, it squeezes its plastic body through the opening. Freedom obtained, it rushes through the water with great velocity, assuming varying forms. The cilia are in constant motion, and the whole appearance and behaviour of the restless little animal convey the idea that it is searching for something. This something, I have little doubt, is its intermediary host. Its correspondence with the embryos of other and better-known distoms justifies the inference that its future history will bear a similar resemblance, and that the various stages of advancing development require its entrance into the body of some animal which will act the part of intermediary host. Now the necessity for the intervention of this intermediary host impresses on this parasite and the disease it produces their endemic character. Speaking roughly, diseases depending on parasites which do not require an intermediary host are pandemic. Again, if parasitic disease, whose parasite requires an intermediary host, does not occur in certain old countries, like China, we have a *prima facie* argument for believing that the intermediary host is not to be found there. From this I infer that the particular animal which acts the part of intermediary host to *Distoma Ringeri* is not to be found in China, but that it is a native of Formosa and Japan. Again, from the fact that the first step in development of the embryo takes place in fresh water, I infer that this intermediary host is a fresh-water animal. Therefore the intermediary host of *Distoma Ringeri* must be searched for among the fresh-water animals common to Formosa and Japan which are not natives of the neighbouring mainland of China.

A glance at the map of Asia will show that Formosa and the great islands constituting the empire of Japan are by no means contiguous, whereas a very narrow belt of sea separates Formosa from the mainland of China. The distribution, therefore, of the intermediary host of *Distoma Ringeri* must depend on something other than mere latitude or temperature. There must be something in the soil or climate which Formosa and Japan have in common, and which is necessary to the well-being of the intermediary host, which China does not afford. I believe this element depends in some way upon a volcanic soil. Unlike the mainland of China, both Formosa and Japan are actively volcanic. On this account, I believe, as research and our knowledge of this parasite extend, it will be found to prevail in other countries where a volcanic soil and certain ranges of temperature and moisture allow of the existence of the intermediary host. I have little doubt that it exists in the Philippines and neighbouring islands.

To return to my patients. The idea of curing them naturally occurred to me, and I made many attempts to dislodge their parasites. The accessibility of the bronchial tubes and tissues of the lungs generally to medicated vapours suggested inhalations of a parasiticide character. With a steam spray I atomised solutions and infusions of various substances, and caused my patients to inhale them. In this way quassia, kousso, santonin, turpentine, and sulphurous acid were applied to the lungs, inhalations being practised daily for a week in one case, and a fortnight in the other. But no mature parasite was brought up, only ova in abundance. However, three months after these inhalations the younger of my patients told me he was quite well; he had lost his cough, and no longer brought up rusty mucus. I irritated his lungs with fumes of burning sulphur, and thus caused him to cough violently, but the small quantity of bronchial mucus he brought up was quite destitute of ova. I believe he was cured. My other patient, I subsequently learned, was not benefited. Of course, the result of inhalations will depend in some measure on the position the parasite occupies in the lungs; if it is free in a bronchus we need not despair of dislodging it, but if it lies in the blood-vessels this may not prove so easy a matter.

From the facts I have adduced it is evident in what direction attempts at prevention should be made. It is only necessary to boil or filter drinking water, and never to eat uncooked vegetables or other uncooked food, to ensure immunity from endemic hæmop-

ysis in the countries where it prevails. London is a very cosmopolitan place, I doubt not, in the matter of disease, as in many other things, and just as we see natives of Japan and other countries in the streets, and meet Englishmen who have travelled or resided in foreign countries, so it is very likely you will meet in your hospitals or consulting rooms exotic imported diseases. I would recommend, therefore, in the event of your being consulted for chronic recurring hæmoptysis by a patient who has resided or travelled abroad, and in whose chest you can find no adequate reason for the blood-spitting, that you should place a little of his bloody or rusty sputum under the microscope.

Dr. COBBOLD said that when the parasite was sent to him for identification he at once recognised it as a genuine lung fluke, and thus confirmed Dr. Manson's previous surmise. He described it in the Quekett Club's Transactions as *Distoma Ringeri*. The parasite reminded him of the *D. compactum*, which he, many years ago, discovered in the lungs of an Indian ichneumon. The position of the suckers and the form and branching of the vitellaria at once pointed to its true nature. It resembled also the *D. Rudolphi* discovered by the celebrated Austrian traveller in the lungs of the Brazilian otter, and the more recently discovered *D. Westermanii* described by Dr. Hebert in the 'Archiv für Mikroskop. Anat.' vol. xix. In most of these animals the flukes were encysted in pairs, generally lying immediately beneath the pleura, and as we descend the scale of vertebrate hosts, the flukes lose the more or less characteristic oval or oblong figure, becoming more or less attenuated, as in *D. Bossi* and *D. cylindricum*. (Dr. Cobbold exhibited the specimen of *D. Ringeri*, and also lung flukes from the ichneumon, frog, and snake.) He thought Dr. Manson had done excellent work in pointing out the parallelism subsisting between endemic hæmaturia and endemic hæmoptysis. The subject was of great importance in relation to tropical disease, and he hoped that the remedies employed would be efficacious, although, judging from the position in which the mature worms occurred in the lungs of animals, he feared they could not be reached by inhalations. In reference to the ciliated embryos, it was interesting to notice, that while in *D. Ringeri* it took at least a month to rear the actively swimming larva, in Bilharzia the rearing could be accomplished in from two to six minutes if the water were slightly warmed. Parasitic lung disease was extremely common in animals from nematode worms, which proved more fatal to their hosts than did the flukes. He congratulated Dr. Manson on the results of his opening investigation.

Dr. S. MACKENZIE thanked Dr. Manson for his researches and arduous labour carried on under great difficulties. He thought that cases of endemic hæmoptysis might probably be met with in this country.

The PRESIDENT quite agreed with the author and with Dr. Cobbold on the importance of these parasitic diseases. There were now several forms of flukes found in man. He appreciated the author's remarks about the geographical distribution of this disease, and thought this parasite would be found in other places.

Dr. MANSON briefly replied.

*April 2nd, 1883.*

### ALPINE WINTER HEALTH RESORTS.

By E. SYMES THOMPSON, M.D.

DR. SYMES THOMPSON read a paper on Alpine Winter Health Resorts. He showed first that the value of Alpine stations in winter was not limited to patients suffering from chest disease: next, that those likely to gain from mountain treatment might safely undertake the journey even in midwinter; and that for overworked professional men needing a change a winter trip to the Engadine was as enjoyable, and often more beneficial, than a summer tour. The number of cloudless (average 64) and windless (average 112) days is the marked feature of the climate. After taking a survey of other meteorological questions, many of which are undetermined, he pointed out the classes of cases most suitable for the mountains. A patient ought to be able to keep up his circulation by active exercise, susceptibility to chilblains being a contra-indication, also a tendency to irritable throat, which the dry atmosphere often increases. In chlorosis benefit is not so marked as might be expected, and the air is too exciting for hysterical patients. Those prone to congestion and nervous headaches, rheumatism, neuralgia, and to jaundice and liver affections are apt to suffer on exposure to cold. Constipation is common, and piles troublesome; chronic skin affections do not improve as a rule. Teeth rapidly deteriorate, and it is important that before going to the Alps patients should visit their dentist. Cases of bronchitis, whether acute, subacute, or chronic, should not be sent, but limited and localised lung consolidations—the result of pneumonia or pleurisy—are among the more favorable cases, the hardened portions of lung becoming pervious and the surrounding healthy lung expanding. In bronchiectasis gradual improvement may be looked for. Spasmodic asthma is generally relieved in winter as in summer; more so, indeed, for the weather is more steady and reliable in winter. Cases of bronchial asthma are suitable only when there is residual thickening. Cardiac cases do badly. In phthisis the grounds for selection are based less on the stage and

character of the disease than on the constitutional state. The fact that the lung disease is so extensive as to lead to dyspnoea, increased at the high altitude, is no barrier; some of these cases improving greatly. If the disease is of limited area, surrounded by healthy lung, the prospect is favorable, whether signs of consolidation, of softening, or excavation exist. If the local evil is of pneumonic origin the prognosis is good, but if due to inherited tubercular disease, even though bacilli are present in the sputa, at least temporary gain may be looked for. Hæmorrhagic cases are most favorable. Hæmoptyesis is not directly induced by the rarefied air, but the resulting exhilaration tempts to over-exertion. Sanguine, excitable patients need increased vigilance against incautious exertion or exposure, while those of a lymphatic temperament must be urged to overcome their disinclination for out-door exercise. A week or two may do much in cases of mental overstrain, but for chronic lung disease at least one month, and perhaps two or three months, may be needed to secure permanent arrest. During a recent visit to St. Moritz and Davos, Dr. Symes Thompson examined a large number of cases. He noticed most marked improvement in the aspect of the patients, many with advanced disease looking and acting as if well, muscular development improved, chest circumference increased, though not to a large extent. Briefly to epitomise the cases there were: four of mental overstrain, all markedly benefited; two of anaemia, one much better, the other not improved; three of cardiac disease (in one case of aortic regurgitation and one of weak heart with mitral disease, the ill effect of the climate was marked, in one of aortic regurgitation no effect noticed); five cases of asthma, all improved greatly; of the phthisical cases, six in the first stage, five improved, one not benefited; of fourteen cases in the second stage, eleven improved, two stationary, and one died; of fourteen cases in the third stage, nine improved, two stationary, and three have died. He expressed his conviction that it would be hard to find elsewhere a series of cases of arrested phthisis comparable to those seen at Davos and St. Moritz in January last.

Dr. C. T. WILLIAMS had been originally opposed to this treatment of lung disease, but had come to see its value, which had been so much insisted on by Dr. H. Weber. He would like to know the ground for Dr. Thompson's assertion that the dryness of the air at Davos and St. Moritz was greater than in Egypt. The special feature of Davos was the great heat of the sun, and the intense cold in the shade and at night. Caution was necessary in having windows open at night, as the temperature might fall to  $-2^{\circ}$  F., and he had seen harm done by the practice.

He was confirmed in his opinion that the climate increases the tendency to pyrexia. More suitable cases were sent to Davos now than formerly. Patients gained weight, appetite, vigour, and power of resisting cold. The effect on the lungs and chest walls from hypertrophy of the healthy lung was most marked; the change was gradual, but it occurred in every case, even in the bedridden, and therefore quite apart from increased muscular development. He found the journey to Davos in winter to be severe and trying, and the open sledging was a great tax upon weakly patients. He advised his patients to go in October, and to move when the snow melted, halting on their way home at Thusis and Berne.

Dr. DE HAVILLAND HALL mentioned that a patient suffering from pleurisy after typhoid fever had spent two winters at Davos, and had improved very much indeed. He came down too rapidly from Davos, and went to the Lakes, thereby retarding his cure. It was a great advantage to be able to get home earlier from Davos than from the Riviera. He asked for information as to the effect of such climate upon cases of fistulous empyema.

Dr. C. WISE had had experience of cold climates in Canada, and had lately spent winters in Davos. His experience was that a sleigh drive of over ten miles on a cold day was too much for delicate people, though ever so well wrapped up. Swiss trains were overheated, but those between Basle and Calais were not sufficiently heated. The ventilation at these high altitudes was imperfect, and he had found it impossible to sleep with his window open at night. The cold at St. Moritz was but little greater than at Davos. Wiesen was less intensely cold. It was well for patients to leave before the snow melted, on account of the winds. Natives died from pneumonia attributable to the sudden chills and changes in mode of life. From his observations he had found the absolute amount of moisture in the air was less at high altitudes than in Egypt, and in any of these places than occasionally in Australia.

Dr. CULLIMORE said the climate of Davos was not suitable for asthma or heart affections. Only when lung disease was limited, and where hereditary tendency and hectic were absent, was residence at Davos good. Patients with nervous diseases did badly, and it was dangerous for patients with degenerate arteries. He thought that for consumptives mountain resorts were bad, and that the rage for sending patients to them would soon pass away.

The PRESIDENT said too much importance had been attached to altitude; it was pure air that was of most value. For many years he resorted to altitudes of 6000 or 7000 feet, and did not experience the remarkable effects attributed to altitude. People had gone to 14,000 or 20,000 feet without suffering from such effects. The dryness of the air had the greatest effect. The winds of India were intensely dry, and also those blowing over the Red Sea. In India, hill climates were of immense benefit to many classes of patients.

Dr. SYMES THOMPSON said that the difference between day and night temperature was small. Cases of hypochondriasis and brain disease did not improve; they were troubled with sleeplessness. The electrical condition of the air was very remarkable. Asthma was very much benefited at Davos.

*April 9th, 1883.*

Mr. BENTON showed a new form of diet chart; and a feeding-cup.

## REMARKS ON THE USE OF THE MOXA IN CHRONIC AFFECTIONS OF THE SPINAL CORD.

By D. H. CULLIMORE, M.D.

The object in view was to show the advantages of the moxa in chronic diseases of the spinal cord; first, by detailing some cases where it was tried with the best results; and second, by scientific arguments to prove its superiority to other forms of counter-irritation.

The first case was one of infantile paralysis of twelve years' duration, which after having been subjected to all the usual forms of treatment was admitted into the North West London Hospital, in an advanced stage of the disease, the patient being unable not only to stand, but even to move one leg over the other in bed. After six weeks, under the influence of a bi-weekly application of the moxa, she so far improved as to be able to walk about the ward with assistance, while in six months she successfully accomplished the journey to a neighbouring church. She walked about the wards without any support, a feat she had never during her life accomplished before. Shortly after, owing to a heavy fall on the stairs, there was not only no further improvement, but a loss of that which with so much time and labour had been attained.

The second case was one of chronic myelitis, the result of injury, of ten months' standing, in a boy aged twelve. On admission, after having had the advantage of "homœopathic" as well as "allopathic" treatment, he was in the last stage of general paralysis, the upper extremities being so impaired that he had to be fed. There were also incontinence of urine, constipation, and bedsores. Here also the moxa was applied twice a week for three months, when suddenly the bowels were moved spontaneously for the first time, and the patient gradually commenced to walk with the aid of a chair. After four months he was discharged cured, having attained strength and flesh, and had since been earning his bread in some useful employment.

Having alluded to some other cases of a similar character, the author drew attention to the different forms of counter-irritation.

Assuming that counter-irritation in some form was useful in the diseases in question, Dr. Cullimore said he hoped to show that the moxa was by far the most efficacious. He detailed an experiment to illustrate the effect of cutaneous irritation on the blood-vessels, which though dilating under stimulation soon resumed their former state. Hence the necessity of its repetition at intervals.

Blisters, the actual cautery, and Mayor's hammer, were not only inferior to the moxa, but were often inadmissible, owing either to their formidable appearance, their liability to complicate from their medicinal nature the interpretation of the remedy, and their great tendency to cause eschars, in conditions favorable to their formation. The moxa, which was of eastern origin, was of all its rivals alone mild, safe, and efficacious.

Different kinds were described, but that which Dr. Cullimore used was made of brown paper saturated with a solution of nitrate of potash, dried and rolled so as to resemble a cigar. To apply it, one end was set on fire and the other placed on the skin in the vicinity of the subjacent lesion. It should be removed before the burning part came in contact with the skin, for in this way no eschar was produced, and it could be reapplied as often as required. During its application the first degree of heat was sometimes attended with an agreeable sensation which gradually increased but was rarely very severe, and often left a feeling of comfort behind it.

Moreover, in addition to its counter-irritative action the moxa had other curative powers, due to the heat which, when it was made as directed, was slowly evolved, and accumulating in the centre of the cylinder so as to penetrate to the deeper parts. In suitable cases its effect was greatest when it fell short of any local inflammation, or desquamation of the skin. It was not, however, only in the cases detailed that the moxa was useful. In all forms of sclerosis, in sciatica, chronic rheumatism and locomotor ataxy, in fact, whenever vascular stimulation by counter-irritation might be required or desirable, it might be relied on for the reasons given above as the mildest, safest, and most efficacious remedy we possessed. In chronic cases, particularly where electricity had failed owing to disease of the nerve fibres and centres that take cognizance of electrical stimulation, as shown by the absence of electric contractility, the moxa should always be tried. Even in the later stages of tabes dorsalis, in consequence of the

permanence of the sensations of heat and cold in this disease, the moxa by reason of its heat-penetrating qualities might fairly be expected to do good.

Dr. ARMAND DE WATTEVILLE had seen the cautery applied in diseases of the spinal cord by Charcot, who used it very largely, and he came to the conclusion that it was only useful in cases of pachymeningitis and disease of the bone.

Dr. ROUTH said that he had often used the moxa and had applied the burnt end to the skin. It was then like an issue, which was far too much neglected in this country. He had also used Corrigan's hammer and had found it very useful. He asked the author whether he had ever employed the moxa in uterine diseases for relieving uterine congestion?

Mr. STEWART BROWN asked whether the moxa had any influence over chronic effusions?

Dr. ROGERS was surprised to hear that the moxa did not cause a slough; he had often used it.

Dr. DOWSE acknowledged the value of counter-irritants in disease of the spinal cord, especially when chronic; but he questioned whether the moxa was of any use in cases of actual sclerosis. Brown-Séquard had laid down rules for the moxa in diseases of the spinal cord, and he said that when there was localised spinal tenderness, congestion of the spinal cord, and irritation of the spinal nerves, the moxa was of use. The moxa had been of very little service in his hands in cases of locomotor ataxy, but he knew of a case of lateral sclerosis of the cord which had recovered under its use.

The PRESIDENT expressed his satisfaction that this subject had been raised. During his residence in the East he had noticed how extensively this form of counter-irritation was used. There was hardly a disease in which the natives of India did not use the moxa, and not in a gentle mitigated form. It was very beneficial in joint diseases and in inflammatory diseases of the spine. The cautery in India was made of charcoal, which was ignited, and the skin was destroyed. Had Dr. Cullimore used his moxa only to produce redness or blistering of the skin, or to form a slough?

Dr. CULLIMORE, in reply, said that he had only produced the slightest amount of counter-irritation. Its advantage was, that its effect could be accurately limited. He had omitted to mention Corrigan's hammer, which was of service in some cases. He had had no experience of the use of the moxa in uterine diseases.

## MALIGNANT DISEASE OF THE PANCREAS.

By T. GILBART-SMITH, M.D.

Dr. GILBART-SMITH read the notes of two cases of malignant disease of the pancreas.

The first, N. J.—, æt. thirty-three, was admitted under his care at the London Hospital on the 16th of March, 1881. He had lived

a sedentary life as a shoemaker, often making considerable pressure upon his epigastrium in the course of his work. There was no history of syphilis. In good health until the previous Christmas; he was then suddenly seized with rapidly deepening jaundice, loss of strength, and pain on pressure in the stomach, with indigestion. For these he was admitted an in-patient; the jaundice was intense, skin-irritation great, appetite voracious; there was no vomiting. Bowels costive, motions light in colour but presented no appearances of fat.

The liver was considerably enlarged, its dulness extending from the fifth rib to a line level with the epigastrium, with a circular fulness, tenderness, and resistance in the region of the umbilicus, which was diagnosed to be the distended gall-bladder. The other organs were healthy. Urine contained nothing abnormal, save abundance of bile pigment. The improvement which at first took place was soon replaced by wasting. His skin was covered by petechiae, and he suffered from boils and cough with expectoration. At his own request he left the hospital at the end of May, to return, however, on June 29th with marked emaciation, distinct signs of lung mischief, and a sore on his wrist leading to erosion of the cartilages and abscess in the sheath of the extensor tendons. He gradually sank and died on August 19th.

The autopsy revealed an enlarged liver with greatly distended gall-bladder. A cancerous mass occupied the head of the pancreas, and completely obstructed the bile and pancreatic ducts. Behind this the pancreas was dilated in the form of numerous cysts containing fluid. In a like manner the hepatic ducts were similarly distended.

The second case was that of F. P—, a clerk, æt. fifty-one, admitted into the London Hospital on July 27th, 1881, complaining of pain in the abdomen. His history, both in regard to himself and family, was good. Two months previously his illness had commenced with dull aching pain in the stomach, unaffected by food but increased by exercise. This prevented sleep and was accompanied by throbbing in the epigastrium.

On admission the pain was found to extend from the neighbourhood of the umbilicus across the abdomen to the left lumbar region. His digestion was good. The bowels were regular and the motions contained no fat.

On examination a firm rounded tumour, with an area of two to

three inches in diameter, was felt one inch above and to the left of the umbilicus. This tumour was painful on pressure, and gave a distinct pulsation with lateral expansion, while a systolic murmur was audible in its immediate neighbourhood. When the patient was placed upon his hands and knees the tumour was felt a little lower in the abdomen, but with diminished pulsation. When placed on his right side the tumour, pulsation, and bruit all vanished, and when on his left, although the tumour was felt, the murmur was absent. With the exception of some emphysema the other organs were healthy. The urine throughout was normal.

Soon after admission the temperature rose. Vomiting appeared, and latterly was incessant. No sarcinae were observed in the vomit, but at the close the matter vomited presented a dark coffee-colour appearance. The abdominal pain increased. It was greatly aggravated by the least movement, and the patient lay with his body flexed and his legs drawn up. The pulsation of the tumour did not increase, but was felt throughout. The bruit was inaudible during the last month. He slowly sank and died on October 7th.

At the post-mortem the following changes were found :—Recent and acute peritonitis ; the mucous membrane of the jejunum and duodenum and the upper part of the ileum were injected and studded with small patches of ulceration, in one of which perforation had occurred.

These ulcers had their long axis transversely to that of the intestine, and corresponded to the area of distribution of intestinal blood-vessels. Underneath the head of the pancreas a small cyst of the size of a large walnut was found filled with dark grumous fluid ; in its cavity the superior mesenteric artery was observed eroded in two places and freely communicating with the cyst. The lower orifice in the artery was filled with a fibrinous clot adherent to its walls. Around the cyst was some thickening, but the rest of the pancreas was normal, and its duct, although dilated, was not obstructed. The heart, kidneys, and spleen were normal. The liver exhibited several small nodules on its surface of the size of small peas. Upon microscopical examination sections from the cyst wall and the liver nodules presented the usual appearances of medullary carcinoma.

Dr. Gilbart-Smith, in his remarks upon these cases, referred to the fact that in the first case, notwithstanding the complete occlusion of the bile and pancreatic ducts, no fat had been found in the stools. The second case, one in which malignant disease eating its

way into an artery had formed a false aneurism resulting in embolic congestion, ulceration, and perforation of the intestines followed by peritonitis, he regarded with some regret, for the physical signs being those of abdominal aneurism, had misled him to treat the case with iodide of potassium and low diet until the onset of peritonitis. He considered these cases of sufficient practical interest to justify his bringing them under the notice of the fellows.

Dr. EWART considered that the diagnosis of pancreatic disease could be made by noticing, 1st, the general symptoms of malignant disease; 2ndly, the absence of a tumour in the early stages; 3rdly, icterus of a particular deep greenish hue; 4thly, the presence of fat in the stools; 5thly, an extreme degree of emaciation.

Dr. ARMAND DE WATTEVILLE showed a new illuminator for surgical purposes. Essentially it consisted in a platinum cone, into which, raised to a certain degree of temperature, the vapour of benzolene mingled with atmospheric air was driven. The brilliant light thus produced was further enhanced by means of a mirror and bull's-eye.

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*April 16th, 1883.*

#### VIPER-POISON AND PERMANGANATE OF POTASH.

By GIUSEPPE BADALONI, M.D. (of Frosinone).\*

THE investigation of the nature and action of viper-poison may be said really to begin with Francesco Redi in 1664, and to have been continued, and in a sense completed, chiefly (to the credit of Italy) by Fontana, who described the poison apparatus for the first time in 1781; by Mangilli (1809), who proceeded with experiments on the action of the poison, and by Prince Louis-Lucien Bonaparte, who taught us its chemical properties; further, by Claude Bernard (1857), Mead, Charras, Mortimer, Smith, Müller, Owen, Dumeril, Ranby, Tyson, and many others, who engaged in the study either in its chemical and therapeutic, or in its anatomical and physiological aspect.

Of late years your illustrious President, Sir Joseph Fayrer, in particular, has directed especial attention to the terrible bite of

\* Translated for the author, and read by Dr. Isambard Owen.

tropical serpents; and I may further mention Nicholson, Cunty, Emery, Leydig, Caruccio, Weir Mitchell, Richards, de Lacerda, and others; who have all used their utmost endeavours to find a means of neutralising the action of the poison on the human economy.

A word on the poison-apparatus will not be out of place. It consists simply of two fine and very sharp poison-teeth or fangs, which are implanted like strong thorns in the superior maxilla, and stand in relation with a gland secreting the poison situated in the temporal fossa behind and below the eye on either side. They are moveable by reason of the mobility of the maxillary bone in which they are inserted, and are invested except at the points with a broad reflexion of the buccal mucous membrane, termed the *vagina dentis*, which ends in a highly muscular ring or band.

FIG. 1.

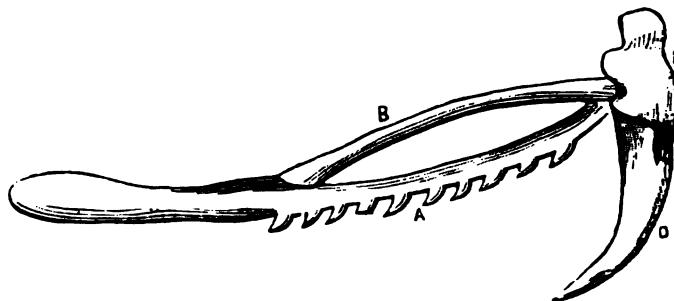


Fig. 1 represents the palatine bone (A), magnified four times and armed with the palatine teeth. It widens out like a spatula posteriorly, where it joins the palato-maxillary (B), which latter articulates, hinge fashion, with the superior maxilla (C). The superior maxilla is very short, and is able to execute swinging movements by means of the play of the muscles attached to its upper end. At one time it was thought that the fang itself was moveable, but, on the contrary, it is solidly implanted in its alveolus, and is raised or lowered only with the elevation and depression of the superior maxilla (C).

It was formerly believed that only one poison tooth existed on each side; but there are really two alveoli in each half of the superior maxilla, close together, which as a rule hold two fully-developed

fangs, the one moveable, perhaps, because caducous, and the other fixed for a weapon of offence.

Behind the poison-fang and close to its alveolus, are a further number of little teeth, five to seven, and sometimes more, joined

FIG. 2.

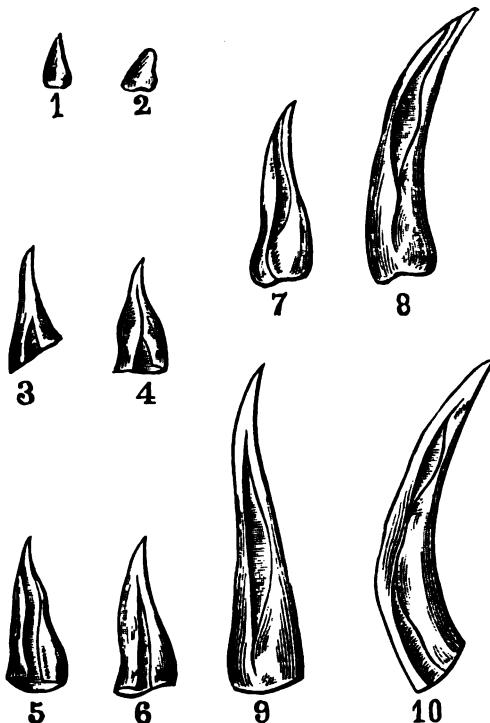


Fig. 2 represents the series of small teeth taken from behind the fang of a *Vipera berus*. They are ten in number, and are shown magnified twenty times. In Nos. 1 and 2 the tooth is seen, so to speak, in the embryonic state, presenting only two very delicate osseous laminæ, nearly flat, which, as they grow, become curved (No. 3), proceeding to form the point. In Nos. 4, 5, 6, are seen the various stages of approximation of the margins, while in Nos. 7, 8, 9, the margins proceed to unite, leaving a wide inferior aperture. No. 10 shows the tooth almost completely developed, displaying the foramina of entrance and exit of the poison, the former of which is not yet seen formed in the other small teeth.

All these teeth are destined by nature to replace the large fang if torn from, or shed by, the animal.

at their bases by strong connective tissue, and ensheathed in the *vagina dentis*. They are disposed in the fashion of a fan, and vary in size down to a minimum length of about half a millimetre. The larger of these exhibit a deep sulcus in the convex side, the edges of which tend to approximate; the smaller show instead a widely-opened furrow, giving them the appearance of a tile, and the nearer they approach to their complete development, the more nearly they assume the form and aspect of the poison-tooth.

The poison-fang proper is not perforated by a central canal like a goose-quill; the channel which is seen is the result of the welding of the margins of a deep furrow hollowed in the anterior face of the

FIG. 3.



tooth, as seen in Fig. 3, which represents the poison-fang of a *vipera berus*, three-quarter face front and magnified to eight times its size. The trace of the welding of the margins (B) persists, and from the failure of such union above at C and below at D, result two apertures, one of entrance above, and one of exit below near the point, by which the poison passes. The upper aperture adjoins the superior maxilla (A), which is in relation with the poison gland.

What is the chemical nature of the deadly fluid secreted in the poison gland? The ancients could tell us nothing to the purpose; Celsus and Galen believed that it was the humour which the gall-bladder secreted. Redi, Mangilli, and Fontana gave us a very

vague idea of it, stating only some physical characteristics. We must pass on to the year 1843, when Prince Louis Lucien Bonaparte made his chemical experiments in Florence, and was able to reveal the chemical nature of the viper-poison to the scientific world. At the fourth meeting of Italian *savants*, held that year in Lucca, he read a paper entitled "Ricerche chimiche sul veleno della vipera," which aroused the interest of the learned of all countries, and which is still quoted in every classical work.

It were superfluous to reproduce here the admirable work of this illustrious chemist, as the scope of my communication does not admit of it. I think it necessary, however, to quote the author's conclusions, that I may be able the better to explain the results of my own experiments, which I shall have the honour of laying before you.

After detailing the different modes of preparation adopted to isolate the active principle, which he called *Echidnin*, from the Greek *έχιδνα*, a viper, Prince L. L. Bonaparte thus describes its principal properties :

It has the appearance of a gummy varnish, inodorous, glistening, and transparent; which detaches itself from the watch-glass, when dried, in brilliant scales like those of tannic acid.

It is inodorous and without definite taste; it does not redden litmus; it does not turn syrup of violets green. Treated with potash and exposed to the action of heat in a platinum spoon, it evolves ammonia (showing its nitrogenous nature), it acts on the blood of animals in the same manner as the natural poison. Mixed with human blood it darkens its colour and arrests its coagulation.

Some time after the admirable work of Prince L. L. Bonaparte, viz. in 1861, comes that of Professor Weir Mitchell, on the poison of the rattle-snake. He followed Bonaparte's process, and concluded by declaring that the two poisons secreted by the viper and the crotalus are similar; that is to say, that the *echidnin* or *viperin* of Prince Bonaparte and the *crotalin* of Professor Mitchell are identical.

The difference between the two processes adopted to isolate the active principle of the two animal poisons will be made clear by describing them briefly in parallel columns.

*Process of Prince L. L. Bonaparte.*    *Process of Prof. Weir Mitchell.*

Coagulate the poison with alcohol.    Boil the poison with a little water till it coagulates, and let it clear. Decant the supernatant opaline liquid, and treat it  
Then pass through a filter and collect the precipitate. The filtrate will contain the colouring matter from which

the poison is freed. Then press the filter to free it from alcohol, and treat it with distilled water drop by drop. Dry the residuum, which is the *Echidnin*. Purify by freeing it from fatty and saline matters with ether and acidulated water.

Mitchell's work had not the value of Prince Bonaparte's, as Poggiale stated in the 'Journal de Pharmacie et de Chimie' for February, 1869, in a critical article which ended as follows :

"Such are the leading facts to which we have thought it right to call the reader's attention. Though the author himself (viz. Prince L. L. Bonaparte) thinks that a more extended investigation is necessary, we must recognise that his work is much more advanced from a chemical point of view than Mr. Mitchell's, and that in the latter physiologist's researches is really found nothing more than the results obtained by Prince L. L. Bonaparte."

These, then, are the results of chemical analysis of the poison :

<i>Of the viper, according to Prince Louis Lucien Bonaparte.</i>	<i>Of the rattlesnake, according to Prof. Weir Mitchell.</i>
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<i>Echidnin or viperin</i> (the active principle).	An albuminoid body, <i>crotalin</i> (the active principle).
A yellow colouring matter.	An albuminoid substance coagulating with heat.
A substance soluble in alcohol.	A colouring matter, and an undetermined substance, both soluble in alcohol.
Albumen or mucus.	A trace of fatty matter.
Fatty matter.	Chlorides and phosphates.
Chlorides and phosphates.	Chlorides and phosphates.

Till recently it was generally held that the viper-poison was nothing else than a poisonous saliva, which acted like the soluble ferments. In 1879 Dr. John Baptist de Lacerda, Vice-Director of the Physiological Laboratory in the National Museum of Rio Janeiro, from his experiments endeavoured to show that this poisonous saliva contained *organised* ferments which bore a remarkable resemblance and analogy to bacteria. This fact I have found no confirmation of in my microscopical researches on viper-poison ; in which, instead, I have remarked white corpuscles precisely resembling leucocytes. At the same time Dr. de Lacerda recommended the ingestion or subcutaneous injection of alcohol as the true antidote of the ferment.

Notwithstanding my conviction of the uselessness of this new

antidote I repeated the experiment. I tried the injection of poison taken from a viper, and kept twenty-four hours under alcohol, and witnessed toxic phenomena. Ferraud, moreover, urged the observance of every precaution in handling serpents preserved in spirit, as serious cases of poisoning had been seen from this cause. And even though no experiment had been made it would suffice to recall that Prince Bonaparte treated the viper-poison with alcohol to isolate the *echidnin*, and that the *echidnin* prepared by him in this manner acted on different specimens of blood like the natural viper-poison. Alcohol, then, has no action whatever on serpent poison; though it remains none the less our best auxiliary in treating viper-bite, as by its stimulant action it wards off the dreaded cardiac paralysis.

The Brazilian physiologist did not abandon his research, and so pursued his experiments that in 1881 he gave up the bacterial theory, and set himself to show that the poison was a digestive juice analogous to the pancreatic secretion of mammals, though possessed of a more powerful action on albuminoid substances. Putting, therefore, alcohol on one side (which certainly Dr. de Lacerda would not have lauded had he considered Bonaparte's chemical researches on viper-poison), after some months of patient experiment, he came to the conclusion that permanganate of potash, injected subcutaneously in a 1-per cent. solution, was the true and only antidote for the bite of poisonous snakes.

He was led to this result from the known fact that permanganate of potash in contact with organic matter gives off a certain quantity of oxygen, which, being in the nascent state, acts on ferments with great energy, suspending or modifying their work of fermentation.

He made his conclusions public on July 20th, 1881, stating that after making forty experiments he felt satisfied of the neutralising action on the poison, and that in consequence the permanganate might be held as the true antidote for the bite of poisonous serpents, especially for that of the rattlesnake. So quickly would the good results be seen that the author thus expressed himself:—“The rapidity of the neutralising action of the substance employed as antidote shows itself to be not inferior to the rapidity of the disturbing action of the poison, which is a fact worthy of greater attention.”

The national enthusiasm for this discovery, thanks to which the  
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lives of so many thousands of victims, annually taken by serpents in hot countries, would be spared, aided by the efforts of American journalism, gave extraordinary publicity to Dr. de Lacerda's labours, which very soon became known in Europe, and were put to the test. In Italy I had the honour of being the first to test the action of the permanganate against viper-poison, before others engaged in its study.

What is the *mode of action* of viper-poison on our organism? This is a point not yet absolutely determined; but most observations and experiments conduce to the view that it exercises a depressing influence on the nerve-centres and on the heart. This was confirmed by the latest experiments of Dr. P. Albertoni, of Genoa, which he communicated to the Ligurian Medical Society at its February meeting in 1879, giving the following conclusions relative to the circulation:

- a. There is a close relation between the severity of the phenomena of poisoning, the greater or less rapidity of the fatal ending, and the blood-pressure.
- b. When the blood-pressure was reduced to about 50 mm., death followed after the lapse of a few minutes.
- c. The blood-pressure is always lowered by the action of the viper-poison.

All the other signs observed, the multiple haemorrhagic and inflammatory congestive lesions of the more active and more vascular tissues, are the effects of the depressed nervous activity, perhaps also of the arrested or slackened circulation.

The death of warm-blooded animals is then probably determined by cardiac and respiratory paralysis due to the action of the *echidnin*, the sole active principle of the poison.

Is permanganate of potash able to antagonise the action of the *echidnin*? No, the permanganate is not the *physiological* antidote of the poison, as it has no stimulant power to counteract the functional depression of the organism. It acts, however, according to Dr. de Lacerda, by exerting a modifying action on the ferment of the poison itself, hindering the latter from acting on the histological elements, by depriving it of its fermentative power. The author further asks himself this question, "Is it the oxygen resulting from the decomposition of the permanganate brought into contact with organic matters which, being in the nascent state, tends to modify the chemical properties of the poison?"

That remains to be shown.

In the meantime Dr. de Lacerda promised beneficial results from his experiments, and published in 1882 a tract containing a series of clinical cases to the number of forty, to corroborate his physiological experiments.

On August 1st, 1881, he wrote a circular entitled "How permanganate of potash should be applied for the poison of the cobra," which gave instructions for the use of the antidote, and which may be abridged as follows:

The permanganate should be injected subcutaneously with a Pravaz's syringe, or else delivered into the circulation by intra-venous injection with Dr. Oré's (of Bordeaux) syringe, according as the poison has penetrated directly into the blood, or has been absorbed by the lymphatics in the connective tissue. To ascertain this for certain, it is sufficient to observe the greater or less rapidity and intensity with which the general and local effects respectively manifest themselves. In the former case, the local phenomena are almost *nil*, and the general symptoms are not slow to show themselves in full intensity; in the latter case, the local symptoms are very conspicuous and the general ones delayed.

The antidote should not be taken by way of the stomach.

Immediately on the accident, it is necessary to tie fairly tightly a bandage between the wound and the heart, and then to introduce the needle, if possible, in the very track made by the blow of the tooth, and then to inject the 1-per cent. solution of the permanganate. For the intra-venous injections the same liquid is employed, taking care to operate on the superficial veins. According to the severity of the cases are needed from three to four grammes, i. e. the contents of two or three of Pravaz's syringes. At the same time, stimulants must be resorted to, to revive the prostrate powers and counteract the general phenomena.

Following the rules laid down by De Lacerda, I soon commenced my own experiments, which I here report.

*First experiment* (Sept. 15th, 1881). 3 p.m.—I took a large and mature *Vipera aspis* just behind the head, and, bringing it against the left side of the upper lip of a large rabbit, made it bite. A few drops of blackish blood oozed from the wound. I made it give a second bite in the middle of the left front paw. After ten minutes I observed the development of toxic phenomena—viz. drowsiness, which quickly passed into somnolence, and slight dilatation of the pupils. A little later a slight degree of meteorismus presented itself, and the head, as if left to itself, fell on one side as though the animal were oppressed by deep slumber. After fifteen minutes of this pathological condition I made an injection with a Pravaz' syringe of a gramme of the solution, inserting the needle into the areolar plane above the right shoulder, close to the neck. The rabbit seemed little relieved, and soon fell into a lethargic state anew. After the lapse of twenty minutes more I made it walk, but it did not keep its feet, and fell. A fresh injection of a gramme. No amelioration; on the contrary, after ten minutes, extreme dilatation of the pupils, followed by convulsions, violent though very short, and death. Although the

antidote was not injected in the actual seat of the wound, yet in thirty minutes it should have been able to act on the poison and prevent death. An hour later Dr. Walter Battistini, veterinary surgeon, made the post-mortem examination, from which I quote the following:—Heart dilated, flaccid, free from clots. Blood dark and very fluid, slow to coagulate. Hyperæmia of the mucous membrane of the stomach with a number of sub-mucous haemorrhagic puncta. Intestines, especially the small, extremely injected, with haemorrhagic puncta. Mesentery the same. Lungs, liver, spleen, and kidneys normal. With electricity, contraction of all the muscles.

*Second experiment* (Sept. 23rd, 1881). 4.16 p.m.—The same viper used on the 15th was applied to the right side of the upper lip of a large and healthy rabbit. Anal temperature  $39.7^{\circ}$  C. ( $103^{\circ}$  F.). 4.40 p.m.—Bitten by the viper. 4.45 p.m.—Symptoms of poisoning. 4.47 p.m.—Injection of one gramme in the areolar tissue close to the neck. Temperature  $39.4^{\circ}$ . 5 p.m.—A second injection of a gramme in the same place. 5.37 p.m.—Temperature  $38.1^{\circ}$ . 6.20 p.m.—Temperature  $37.2^{\circ}$ . The rabbit remained for several hours in a state of prostration and apathy, but not of severe depression. After a time it recovered strength progressively, and after twelve hours the temperature regained the normal.

*Third experiment* (Sept. 27th, 1881). 2.45 p.m.—A young *Vipera berus* was made to bite the upper lip of the rabbit that had been used in the preceding experiment. Temperature  $39.5^{\circ}$  C. 2.50 p.m.—Bitten. 2.58 p.m.—Somnolence. 3.35 p.m.—Temperature  $38.6^{\circ}$ . 4.30 p.m.—Temperature  $37.4^{\circ}$ . This time I made no injection at all of the antidote, so as to see if the temperature followed the same curve. In the result the thermometer at 5.28 p.m. marked  $36.1^{\circ}$ . I left the animal to itself, and when I visited it the next morning it was a little slow in its movements, as in the preceding experiments, but the temperature was restored to the normal.

*Fourth experiment* (Nov. 12th, 1881). 2.40 p.m.—The rabbit of the preceding experiment was bitten on the right side of the upper lip and on the left hind leg by two *Viperæ aspides*, which had fasted for more than a month. Anal temperature  $39.8^{\circ}$ . 2.45 p.m.—Bitten by one viper. 2.55 p.m.—Temperature  $38.7^{\circ}$ ; loss of urine; somnolence. 3.10 p.m.—Bitten by the other viper; loss of urine; somnolence. 3.15 p.m.—Temperature  $38.7^{\circ}$ ; loss of urine; somnolence. 3.25 p.m.—Temperature  $38.5^{\circ}$ . 3.40 p.m.—Symptoms aggravated. Three grammes of the antidote injected into the actual seats of the wounds. 3.45 p.m.—Temperature  $37.5^{\circ}$ . Drowsiness and difficulty of walking more marked. A second injection of the solution of permanganate. 3.50 p.m.—Temperature  $37^{\circ}$ . 4 p.m.—Dilatation of the pupils. 4.7 p.m.—Temperature  $35.6^{\circ}$ . A fresh injection of a gramme. The pupils more widely dilated. Somnolence passing into the comatose state. 4.30 p.m.—Temperature  $35.5^{\circ}$ . 5.10 p.m.—Temperature  $35.2^{\circ}$ . Same symptoms. 6.40 p.m.—Temperature  $34.5^{\circ}$ ; insensibility; eye motionless; extreme dilatation of the pupils. 10.15 p.m.—Temperature  $35.3^{\circ}$ ; pupil less dilated and somnolence less; movements easier. The temperature went on rising till the following morning, when, though the animal refused food, it had normal agility in its movements.

*Recapitulation.*—In the first observation two grammes of the antidote were injected, and the animal died in about an hour. Similarly in the second, where death did not occur, the temperature went continuously down as low as  $37.3^{\circ}$  C. In the third, without any solution of the permanganate having been injected, the temperature fell to  $36.1^{\circ}$ , and in

the sequel the active power of the poison was low and unable to produce death. In the fourth, while it is an important point that the notable lowering of the temperature was the effect of the poison of two vipers, five grammes of the antidote were injected without obtaining any benefit. On the contrary, the temperature was reduced to 34·5° an hour and a half after the injection of the last gramme. If permanganate of potash neutralised the action of viper-poison, the temperature of the wounded animal, instead of going down, ought after its application, if not to rise, at least to remain stationary; not therefore to fall as far as from 39·8° to 34·5°, or through five degrees and three tenths. Thus the cases that did not end fatally presented a constant lowering of bodily temperature, which, in spite of the injection of the antidote, continued decreasing until death seemed impending.

I then made another series of experiments on smaller animals—viz. mice (*Mus musculus*), to eliminate the doubt that in the previous experiments death failed to occur by virtue of the antidote, not owing to the enfeebled power of the poison.

1. On December 13th, 1881, at 1.50 p.m., I took a mouse weighing 90 grammes and submitted it to the bite of a *Vipera aspis* on the right hind leg. Immediately I injected two grammes of the solution of permanganate of potash at the same spot. Ten minutes later all the symptoms of poisoning showed themselves severely, and not only did I obtain no amelioration whatever, but the animal succumbed amid convulsions in another thirty-four minutes. The postponement of death for three quarters of an hour in a little mouse, which in summer falls a victim in from five to seven minutes, at the same time convinced me of the feeble power of the poison when the temperature of the air is cold, and gave confirmation of the inefficacy of the remedy used, all the more as, if four grammes of the antidote sufficed for a man, two should be more than enough for a mouse. Cadaveric rigidity showed itself four hours after death, to disappear thirty-six hours later. The point of injection was in the areolar tissue between the thigh and the abdomen; the liquid had been absorbed and the colour of the neighbouring tissues was everywhere dark from the injection of the solution of permanganate.

But the objection might be raised, was it not the two grammes of the solution of permanganate that, by undue intensity of action, caused the death of the mouse rather than the poison of the viper? On the 17th of the same month I took three other large mice. Before commencing further experiments it was necessary to irritate strongly my vipers, in order to arouse them in some degree from the lethargic state, and I should remark here that the atmospheric temperature had fallen to the freezing point.

2. I caused the first mouse to be bitten on the right leg by a well-grown *Vipera berus*, and at once injected a gramme of the antidote by the actual opening made by the tooth. Symptoms of slight poisoning quickly appeared, but of short duration, and in half an hour the little animal appeared as lively as before.

3. I did the same to the second mouse, with identical result.

4. I placed the third mouse inside a basket, in which I kept four vipers of different sizes and ages. As soon as they saw themselves in company with a mouse, an animal for which they display the most unbridled hate, they erected their heads and quivered convulsively,

emitting prolonged and frequent hisses. Each held its mouth wide open, and waited in readiness for the mouse to move to attack. In the event, after a few movements of the unfortunate stranger, which was endeavouring to flee, all the vipers launched furious blows at it, and their heads fell like hammers on the body of the wretched mouse, which now squealed, now shunned the blows, and now, shrinking and trembling, seemed to seek to calm the anger of its enemies, as if suing for peace. The strife lasted some time, and peace only returned after I removed the poor animal from the cage. It had received no less than eight bites. I did not inject any dose of the antidote into this last mouse, which I attentively watched. It kept quieter than the others. Its movements were less agile and more sluggish. It sought neither to flee nor to hide itself, and seemed much prostrated in power. These symptoms lasted for little more than a quarter of an hour, only half the duration of the symptoms in the two preceding experiments, at the end of which time it had returned to its original condition.

From the sum of these experiments of mine three points should remain proved—(a) That the poison of the viper in the cold season exercises an action almost *nil* on even the most delicate organism. In fact, the experiments practised on days successively colder gave results relative to the level of the atmospheric temperature. (b) That the permanganate of potash is incapable of neutralising the action of viper poison, since the symptoms, instead of improving after the hypodermic injections, followed all the phases of poisoning. (c) That if death did not actually occur, it was only from lack of power in the poison, and not by virtue of the antidote.

These conclusions regarding these experiments of mine were communicated by me to the Med.-Chir. Soc. of Bologna, at its meeting on January 13th, 1882, when, finding no cause capable of explaining the want of success of the experiments made, except the valuelessness of permanganate of potash in viper-bite, I ended with these words:—"It cannot be said that the viper-poison has a different chemical constitution from that of the rattlesnake, the speedy fatality of whose bite depends only on the larger amount of poison which is inoculated; since the investigations made by Prince Louis Lucien Bonaparte and by Prof. Weir Mitchell came to identical results."

Ere long, Dr. de Lacerda sent me a critical letter, under date March 28th, 1882, and published an article in the Paris 'Journal d'Hygiène' in which, as in his letter, he sought to destroy my experiments, declaring them inexact and therefore fallacious. In effect he began by declaring—

a. That the poison of our viper is in no way different from that of the venomous serpents of Brazil.

*b.* He blamed me for having employed animals of too small size for my experiments, on the ground that in them the absorption of the poison takes place too rapidly to allow the antidote to reach it in time to neutralise it.

*c.* He said that the injection of an antidote should be made *immediately* on the inoculation of the poison, since the former acts only if brought into contact with the latter before it is absorbed and taken into the circulation.

He then recalled the experiments made in India by Vincent Richards, who obtained the following results:—The poison of the cobra, in quantity sufficient to kill a dog, mixed first with the solution of permanganate of potash and then injected under the skin, remains inert. If the injection is made under the skin before, immediately on, or three minutes after that of the poison, the animal in no way suffers; but whenever absorption has taken place the permanganate is useless.

In answer to the letter of the Brazilian physiologist I will remind my readers that my having employed small animals in which the poison would be rapidly diffused in no way damages my experiments, inasmuch as when death occurred it took place very slowly; and whenever a fatal result was not obtained the duration of the toxic phenomena was a very long one. Thus, even although I had reached the phenomena of poisoning before administering the antidote in the second experiment, I made the injection only seven minutes after the reception of the bite by the animal. Nevertheless, the poisoning followed its course to the end.

In the first experiment it is true that I injected the antidote in the stage of advanced poisoning, but the injections were made thirty minutes before death, and consequently the potassic permanganate, were it endowed with antidotic action on the viper-poison, should certainly have attacked the poison, though in the circulation.

In face of these facts how may one explain the contradictory results of my experiments and Dr. de Lacerda's? Either one must believe that the permanganate exercises no neutralising action on the poison, or else, while attributing its virtue to the oxygen it develops in contact with organic matters, it remains to be proved that the oxygen would be developed only at the moment of injection, and therefore that this purely chemical antidote succeeds only "in the seat of, and immediately upon, the inoculation."

In such a case, even though it possesses a neutralising power, it remains well nigh useless, since it would be impossible on most occasions to have the permanganate ready so as to be injected under the skin within five or six minutes after receiving the bite.

Further, I do not consider as devoid of value the four experiments I made on mice, which were carried out in conformity with De Lacerda's prescriptions. Though the injection of the antidote was practised soon after the accident, and in the very point where the poison penetrated, in no way was any benefit observed from the action of the permanganate of potash.

[Dr. Badaloni then proceeded to remark on a further criticism of Dr. de Lacerda's, that the amount of poison introduced was not accurately measured, which criticism, he said, was beside the point in relation to experiments purely qualitative in their nature. To Richards' observations, quoted by Dr. de Lacerda, Dr. Badaloni opposed the well-known experiments of Sir Joseph Fayrer in 1869 ('Thanatophidia of India,' pp. 95, 96). These experiments had been performed with the observance of every essential demanded by De Lacerda, and with purely negative results.

Professor Mantegazza further, in a letter to the Roman 'Rassegna' of June 25th, 1882, had objected to Dr. Badaloni's assumption of the identity of the viper and rattlesnake poisons on the ground that the analysis of the former, made so far back as 1843 by Prince Louis Lucien Bonaparte, could have but small value at the present day. To this Dr. Badaloni remarked in the first place that Dr. de Lacerda himself admitted this identity, which, indeed, no one but Prof. Mantegazza had disputed; secondly, that Prof. Mitchell's analysis of the rattlesnake poison had been made as late as 1861 by essentially similar processes, and that his (Dr. Badaloni's) assumption rested on the almost identical results of these two researches conducted at such an interval of time; thirdly, that Poggiale had in 1869 cited Prince Bonaparte's work as being *in advance* of Mitchell's; and, fourthly, that modern chemists not infrequently relied on analyses made by Berzelius and others long before the date of those he had cited. Modern chemistry might add something to Prince Bonaparte's work, but would certainly not overthrow it as far as it went. It was up to the present the sole treasure that science possessed on the subject of the chemical constitution of viper-poison. The sole difference, in Dr. Badaloni's

opinion, between viper and rattlesnake poison lay in the greater quantity which the latter animal was capable of injecting.]

Dr. Badaloni concluded :

" Whatever value should be given to the experiments made by means of permanganate of potash on serpent poison by different authors up to the present, it is certain that the question remains unsolved, this substance not having yet answered the expectations of European experimenters as it did in the hands of Dr. de Lacerda.

" In the approaching summer, when our vipers, *berus* and *aspis*, are in full vigour, I propose to return to the subject, and shall repeat all the experiments, paying strict attention to the precepts of the Brazilian physiologist, that I may satisfy myself and establish in a definite and absolute manner whether permanganate of potash in one-per cent. solution is capable of neutralising the effects of viper-poison."

The PRESIDENT said that the interest of the paper was enhanced by the fact that there was present that evening Prince Louis Lucien Bonaparte, who made the first analysis of viper-poison. He (Sir Joseph) had himself alluded to this discovery of the alkaloid in the virus in his researches published twelve years ago.

PRINCE LOUIS LUCIEN BONAPARTE said that it was nearly forty years since he pursued the study of the viper-poison, but he was then doing his best to discover its chemical nature, and suggested to physicians at Florence to experiment upon it. He had not studied its physiological action, but confined his researches to the action of the poison upon the chemical composition of the blood. What was the reason why blood, especially human blood, lost its coagulability under the influence of the poison? He thought the change was possibly akin to fermentation, a small quantity setting up changes in a large amount of blood; a small quantity of the alkaloidal principle, echinidin, acting upon the whole mass of blood. This was contrary to Lacerda's theory. Permanganate of potash was strongly oxidising, and this oxygen ought rather to increase the activity of bacteria than destroy them. He was not inclined to believe in De Lacerda's results, and great scientific caution must be used in estimating them.

Dr. BROADBENT thought that the Prince's remarks were very suggestive. How did these poisons destroy life? By primary action on the nervous system, or on the blood, which then acted upon the nervous and vascular systems? Dr. Wall distinguished between the effects upon the heart and upon the respiratory system. He agreed with Prince Bonaparte in hesitating before accepting the value of permanganate of potash in viper-poisoning. Careless experimenters might easily have been misled by the different intensity of the poison at different seasons of the year. There might also be a difference in the intensity of the poison of the viper and the rattlesnake.

Dr. WILLIAMS asked Sir J. Fayer as to the state of the blood-globules

in viper-poisoning, and what effect the poison of one viper would have upon another, and what upon different classes of animals.

Dr. CULLIMORE thought that if the permanganate of potash acted in a chemical manner, and the poison was bacterial, its action ought to be immediate. Oxygen was fatal to micro-organisms. It would be interesting to know what animals De Lacerda experimented upon. He had been informed that during the Civil War in America death from rattlesnake bite was very rare when proper treatment and precaution had been observed. The best treatment was alcohol and cardiac stimulants.

Dr. ROUTH said the question whether the poison acted directly on the blood or on the nervous system depended upon the intensity of the virus, and it might act in both ways. A potash salt in sufficient quantity acted as a direct poison. The chloride of potassium killed instantly. To inject the permanganate of potash was to introduce a poison. Pasteur had shown the action of oxygen upon bacteria, and why should not peroxide of hydrogen be given, for it yielded oxygen far more readily than the permanganate?

Dr. HICKS said the permanganate of potash only gave up oxygen to substances in its immediate vicinity. Its action would therefore be purely local, and it could not be of use in the general blood current.

The PRESIDENT, remarking upon the extent of the subject, said he would limit himself to one or two of the most important points. He wished the author of the paper were in the tropics, where he could experimentalise better on the subject. Permanganate of potash was a chemical antidote to snake poison, not a physiological antidote. It had no effect on a poisoned animal or man, but it decomposed the poison out of the body. The poison entered the system very quickly. About 90 per cent. were bitten in the extremities, and the part could be isolated to a certain extent, but it rarely happened that it was possible to apply any antidote. Permanganate of potash could be used locally to destroy the poison in the wound when a man was bitten and help was near for a ligature to be applied above the wound at once. In cutting out the part it was necessary to remove all the tissues stained the peculiar red tint caused by snake bites. Possibly the injection of a stronger solution of the permanganate might be required for its local effects; but he was sure it was of no value when the poison had once got into the system. He believed that great good would result from the experiments made by himself, L. Brunton, Lacerda, Ewart, Wall, and others. There was no physiological antidote to the effect of snake poison upon the nervous system, no more than to a bullet passing through the brain. Prince Bonaparte and others worked under great disadvantages, having very dilute poisons to work with. The poison of the echis was infinitely more deadly than that of other much larger poisonous snakes. It was very rare for a healthy person to die from a viper bite. As Dr. Wall had clearly demonstrated, there were two or three totally distinct snake poisons. The teeth of a viper had no motion, but the maxillary bone moved. In the colubrine snake the maxilla was larger and hardly moveable at all, but in all the poisonous snakes the maxilla was devoted entirely to the poison fangs. The poison of the colubrine snake killed by paralysis of respiration, both centrally and peripherally. The viperine acted at first upon the blood: it killed rapidly, producing convulsions, haemorrhages, and non-coagulability of blood. He had never seen any microscopical change in the blood; the corpuscles were a little crenated.

After cobra poisoning, the blood coagulated firmly, except occasionally in man. Cobra poison in a vein killed (man) in half an hour. The action of the poison was slower upon fish, snakes, and lizards; they became quiet and sluggish and then died. The bite of a cobra did no harm to another cobra, but killed a viper in from two to three days, either from the effect of the wound or its special poison. Care in nursing would often determine whether a man should live or die when the dose of poison was small; but if a man be bitten by a vigorous cobra he certainly would die therefrom unless the entry of the poison into the blood were at once prevented. Stimulants were useful to prolong life. He did not think it likely that suction would extract much poison from the puncture, and as the poison was absorbed through the mucous membrane, there was danger to the person sucking the wound given by a deadly snake. The poison killed if passed into a rabbit's stomach or into a bird's gizzard.

PRINCE LOUIS LUCIEN BONAPARTE said that Sir J. Fayrer had proved the difference between viperine and colubrine poison; they were chemically different, the one coagulating, the other not coagulating, albumen. Analogy pointed to the difference in the chemical composition of the poisons of different species of snakes.

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*April 23rd, 1883.*

Mr. PEARCE GOULD showed a case of ununited fracture of the olecranon on which he had performed antiseptic suture of the fragments with success, firm union with complete mobility of the joint being obtained.

#### SPINAL DEFORMITY AND FRAGILITY OF BONE IN ITS RELATION TO INSANITY.

By ROBERT J. LEE, M.D.

DR. LEE read a paper on a case of spinal deformity and fragility of bone in its relation to insanity (patient shown). He remarked that the diseases of bones which caused deformities were obscure in their origin and difficult to explain. The pathological changes alone did not assist us in understanding them, and it was rather by observing the subtle influences of the hereditary peculiarities and by close study of the clinical history of cases that we could arrive at such a knowledge of the causes as to enable us to treat the diseases with advantage. The man was thirty-nine years old, and had lost

in seven years nearly five inches and a half in height from curvature of the spine, tibia, and other bones. He had broken both humeri at different times, as well as the clavicles and the patellæ. There was a strong family history of insanity and dipsomania. This man had not taken stimulants for twenty-five years. The exact nature of the case was doubtful, as there was some thickening of the bones and other symptoms of osteitis deformans; at the same time there were some of the ordinary symptoms of malacosteon. Could the two conditions co-exist?

Dr. SYMES THOMPSON asked if there was anything like the gastric crises seen in locomotor ataxy. The case was unlike the ordinary cases of fragility of bone in progressive muscular atrophy, Charcot's disease, osteitis or mollities ossium.

Mr. HUGH SMITH asked if the urine contained an excess of phosphates.

Sir J. FAYBER asked if Dr. Lee had inquired into the statistics of lunatic asylums as to fragility of bones. The disease was not inflammatory. Had any other members of the family suffered in the same way? He mentioned a case where a tibia became bent from chronic osteitis following an abscess which had been cured by trephining.

Dr. LEE, in reply, said there was no gastric crises nor marked excess of phosphates in the urine. Its resemblance to rickets had attracted his notice. In cases of rapid bending of bones after fever the bones recovered quickly, and those cases differed from the common form of rickets. Rickets was associated with nervous depression. Fragility occurred in paralysis of the insane, and osteomalacia had been seen in melancholia. In the present case no other members of the family were affected.

## FOREIGN BODY IN THE PTERYGOID REGION.

By T. F. HUGH SMITH, Esq., F.R.C.S.

MR. HUGH SMITH related a case of foreign body in the pterygoid region. In March last a boy, aged six years, was brought to Mr. Henry Smith, having fallen with a piece of clay pipe-stem between his teeth. On rising from the ground blood flowed freely from the mouth, and a small opening was visible internal to the second lower molar on the right side. On passing a probe a rough surface was felt at the depth of half an inch. Chloroform was given a week later, but owing to the rigidity of the jaws an attempt to remove the foreign body failed. Five weeks later chloroform was again given, the mouth being kept open with Rose's gag; the sinus leading to the rough surface was enlarged by incision, and a

piece of pipe-stem one inch long was removed with the nasal polypus forceps. Mr. Smith also detailed a similar case which came under the care of his father, Mr. Henry Smith, twenty years ago. A man while smoking received a violent blow in the face. Five or six months afterwards he suffered from a painful swelling behind the angle of the jaw proceeding from an abscess, and eventually from its sac was taken a piece of pipe-stem an inch long. In both of these cases the foreign body entered the soft tissues internal to the ascending ramus of the jaw.

Sir J. FAYBEE mentioned the case of an officer at Darjeeling, who fell on the stump of a bamboo and was impaled. He remained there for many hours; the bowel was injured and also the bladder. He was sent to Calcutta, and after great suffering a stone was eventually found in the bladder around a fragment of bamboo.

Dr. ISAMBARD OWEN referred to a specimen in the museum of St. George's Hospital of a hat-peg broken off through the stem. It had been lodged in the orbit, and was extracted; the patient recovering.

Mr. ALBAN DORAN said there was often no suppuration around steel instruments—*e.g.* a prong of a fork.

Mr. PEARCE GOULD referred to the fact that many foreign bodies remained in the tissues without setting up suppuration, which appeared in many cases to be due to septic particles carried by them into the wound.

Sir J. FAYBEE added that foreign bodies caused mischief by the great tearing and bruising of the tissues. He had known bullets to remain encysted in the body for many years without injury.

Dr. DAY mentioned a case where a fish-bone in the rectum caused long-continued and profuse haemorrhage, which ceased on the detection and removal of the foreign body.

Mr. BLACK knew of a case of intractable rectal abscess, where, at the end of a year, a piece of trouser was extracted, which had been carried in by impalement some years before.

#### SUPPOSED PYÆMIA IN A CHILD.

By WM. H. DAY, M.D.

DR. DAY read notes of a fatal case of supposed pyæmia in a female child, associated with extensive changes in both kidneys and bladder. The child was twelve years and a half old, and came under care on Feb. 10th, 1883, suffering from constant sickness and failing strength. Five years previously she was said to have had measles and scarlet fever. Two days after admission a large and prominent tumour was detected in the abdomen, extending from the umbilicus to the pubes. This proved to be the bladder; a catheter

was passed with difficulty, owing to contraction of the urethral orifice, and twenty-six ounces of acid urine containing a little pus were drawn off. A petechial rash appeared, and became general. On the 23rd she became delirious, and on the 25th she died. After death the right kidney weighed three ounces. Its capsule was thickened and universally adherent; the pelvis was dilated, containing four ounces of turbid urine. The left kidney weighed about five ounces, its surface covered with points of suppuration and small abscesses; the ureter dilated and its walls thickened. The bladder had thickened walls and greatly congested lining membrane. Dr. Day remarked that retention of urine is rare in children, especially in girls. The cause in this case was obscure. The contracted urethra might account for the bladder condition; and he thought the fatal illness was of pyæmic nature.

Dr. AMAND ROUTH thought the cystitis preceded the contracted condition of the urethra.

Mr. PEARCE GOULD thought the case was one of surgical kidney caused by stricture of the urethra.

Dr. ROUTH agreed with Mr. Gould. He asked whether the child had syphilis. A stricture might often occur from a cicatrising chancre; or was there any history of masturbation?

Dr. EWART suggested that there was local tuberculosis of the urinary tract. If it was pyæmia, it was local and not general, and death resulted from uræmia.

Dr. DAY said there was no evidence of vulvitis or of masturbation, nor of syphilis. The symptoms were not those of uræmia. There was no tuberculosis.

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*April 30th, 1883.*

#### DYSENTERY AND LIVER ABSCESS.

By SIR JOSEPH FAYRER, K.C.S.I., M.D., F.R.S.  
PRESIDENT.

THE following example of liver abscess illustrates a form of disease which is not very uncommon among the numerous invalids who return from tropical or subtropical and malarial climates, and is more frequent in those who have resided in India or China than in Africa, the West Indies, or other colonies. I have therefore

ventured to bring this case before you under the impression that it may prove of interest, and perhaps help to throw some light on a subject which, I know from experience, is not unfrequently brought under consideration in this city and its suburbs—indeed, throughout the United Kingdom generally, in almost every part of which are to be found old residents of our tropical and colonial possessions, who have returned with the seeds of disease, sown abroad, to be developed at home. Liver abscess, of course, is not confined to tropical countries; it may, and does, occur in our own islands, but is comparatively rare, and when it does happen is generally, if not always, due to septic absorption from some external wound or operation, some ulcer of the stomach, intestine, gall-bladder, or its ducts; in certain cases to ulceration or suppuration in the pelvic cavity, rectum, or ischio-rectal fossa; to fistula in ano; it may be to cancerous ulceration in the bowel or elsewhere, or to suppuration of a hydatid cyst. Such cases are generally to be regarded as of a secondary or pyæmic character, and differ widely from the large, frequently, though not always, single abscess, which, from its frequent occurrence in the tropics, has been termed by Murchison tropical abscess, though they are very similar to, if not identical with, certain dysenteric liver abscesses in which multiple foci of suppuration are due to septic absorption and constitutional pyæmic contamination from the dysenteric ulceration in the large intestine. As you are aware, tropical abscess of the liver is often seen in this country, but it is usually in the persons of those who have contracted the disease abroad, or who have developed it here as the result of disease from which they had suffered in the tropics. Now this form of liver abscess may be of different kinds. 1. The large single abscess, which is etiologically referable to the influences of heat, altered conditions of living, feeding, and the excessive or injudicious use of alcohol in tropical, subtropical, and malarial climates. The abscess is the expression of these pernicious influences, but it partakes more of the character of a local complaint, and is independent of ulceration of the bowel or of disease in any other part of the economy. In such cases the abscess is often large, is solitary, though there may be more than one, and is frequently preceded, especially in the strong and vigorous, by all the symptoms of active congestion and inflammation of acute hepatitis. In others, however, it assumes a more insidious and chronic form; with few well-marked symptoms, or such as escape notice, and the

abscess is only revealed by unexpected bulging of the thorax, or pointing in the epigastric hepatic region, or by spontaneous evacuation of the contents through the lung, stomach, or bowels; in some rare cases it is not detected until after death, during post-mortem examination. 2. Liver abscess following, or coexisting with, dysentery, by Murchison and others was regarded as of a pyæmic nature, due to absorption of pus or septic matter from the ulcerated bowel, and therefore coming within the same category as liver abscess, originating in this country, and resembling it in its pathological character, and in being multiple. That this is the case in some instances cannot, I think, be doubted, and when the multiple abscess does occur in a dysenteric patient, perhaps no better explanation of its origin can be offered. Such a condition is, of course, one of extreme danger; indeed, it may be regarded as fatal. And here I would ask you to note the true character of these multiple abscesses, which in the outset are really no abscesses at all, but necrosis of small portions of the liver parenchyma, which, if the patient live long enough, become abscesses by suppuration occurring in the congested and inflamed liver tissue around the dead spot, which thus becomes detached and loose like the core of a boil in the centre of the cavity. I have repeatedly seen these so-called abscesses in all stages of development, from the spot of dead tissue or embolic infarct surrounded by its areola of congestion, to cavities of various sizes filled with sanies, puriform matter, and débris of liver tissue, and finally those in which real pus had formed. They are generally numerous and varying in size from a mere speck to a pea, from a marble to a walnut, an orange, or larger, and it frequently happens that they are not confined to the liver, but are found in other viscera, such as the spleen, kidneys, and lungs as well. These cases are truly pyæmic, and are, as I have said, most fatal.

It was thought by some pathologists that hepatitis and dysentery were dependent on each other. Annesley maintained that dysentery is the result of hepatitis; others that the hepatitis is the result of the dysentery. Dr. Budd, thirty-five years ago, put forth the opinion—and his view has met with much support in this country, though not in India—that liver abscess is always due to purulent absorption from the bowel, that, in fact, tropical liver abscess is pathologically identical with the liver abscess of this country. Dr. Abercrombie thought that though they co-existed they were inde-

pendent of each other. Murchison, Macpherson, Maclean, and others concur in this. Martin and others thought that liver abscess was intimately connected with disease of the cæcum, but this has not been confirmed by post-mortem examination; for of 72 cases where the cæcum was affected in only 22 was there liver abscess. Moore of Bombay says that eight observers out of twelve record a percentage of 18, or 295 cases of liver abscess in 1532 of dysentery cases; four others give a ratio of 39 per cent., or 52 cases of abscess out of 131 cases of dysentery; 18 per cent. is probably the correct ratio. The larger percentage is more likely due to all diseased conditions of the liver that have accompanied dysentery. Recent observations, I think, confirm this view of the relative frequency of hepatic abscess in connexion with dysentery, and though in some instances of multiple abscess the condition is due to septic absorption, yet liver abscess generally must be regarded rather as an expression of the general disease than as a direct consequence of dysenteric ulceration of the large intestine. It would appear, then, that in different climates it is more or less frequent according to circumstances, but that there is a greater tendency to it in India than in other climates. In malarious countries liver abscesses frequently occur in association with remittent fever without any ulceration of the bowel (Morehead). Macpherson gives the comparative frequency of liver abscess in dysentery as varying from 13 per cent. in the General Hospital, Calcutta, to nearly 60 per cent. (according to Annesley) in Madras.

I think it must be admitted that liver abscess and dysentery are often co-existent, or that one may follow on the other very closely, and that in a certain number the hepatic abscess is due to absorption from the diseased bowel, yet that the two diseases occur frequently, nay generally, quite independently of each other. Numerous post-mortem examinations have shown that liver abscess was unaccompanied by any signs of present or past ulceration in the bowels, whilst equally numerous cases of death from dysentery were unattended by abscess in the liver.

For the present I exclude from consideration the large single tropical abscess, in which there is no question of a dysenteric origin or complication, and now wish to direct attention to the question of the relations of liver abscess to dysentery when the symptoms of both diseases are present. The case I bring under your notice this evening is an example in point; and I would ask you to observe

that although true dysenteric—i.e., pyæmic—abscess of the liver is of not uncommon occurrence, and is to the last degree dangerous, yet that not all abscess of the liver complicated with dysentery is of this grave form, and that a man may have dysentery and liver abscess too, and still may recover. And here I would remark that, although I regard some of the cases of dysenteric liver abscess as merely the result of a common cause affecting alike, though independently, both liver and bowel, yet that in others I believe the liver abscess may be the consequence of direct absorption of purulent matter through the liver from the bowel; in which case the abscess may be single or double, or triple, but this is a different state of things pathologically from that general pyæmic condition which results from infection of the whole system by absorption of septic matter from the degenerative ulceration; in which cases the mischief is multiple, and often general:

The relation of liver abscess to dysentery, I should say, might be briefly summarised as follows:

1. The so-called abscesses which originate in local deaths of parenchyma (pyæmia, embolic deposits, or infarcts) are cavities varying in size from a mere speck to an orange, containing débris, sanies, puriform matter, leucocytes, and, finally, pus. They are seen in various stages of development, and are not necessarily confined to the liver, but occur in other viscera or regions of the body. These are truly pyæmic.

2. There is, I believe, a form of liver abscess co-existent with, and perhaps due to dysentery, which is the result of direct absorption and transference of pus or septic matter from the bowel to the liver through the mesenteric veins. Such may be solitary, double, or triple. This is also a very dangerous form of the disease, though not necessarily fatal, as it is feared must always be the case in the former variety.

3. Dysentery, malarial fever, and hepatitis may co-exist, or super-vene on each other as effects of common climatic cause; it seems natural to ascribe the liver abscess in such cases to the dysentery, but it is probable that they are rather coincidences than consequences of each other, and that the cause which affects the glandular structures of the large intestine may determine the mischief in the liver in certain climates and localities; such are obviously very different from those previously mentioned.

4. Lastly, I may just allude to the ordinary large and most fre-

quently single tropical abscess, which is quite independent of dysentery, though, as just mentioned, it may co-exist with or follow it. Each or all of these forms may be brought under our notice in this country as the result of disease originally contracted in certain climates.

As to the extent to which hepatitis prevails in India the last statistical report gives the following information :—"In the European Army of India, averaging 57,742 men, 28,780 admissions and 1267 deaths were recorded under hepatitis during the ten-year period 1870 to 1879. This gives an admission rate of 49·8 and a death-rate of 2·19 per 1000. In the Army of Bengal the admission rate was 47·1 and the death-rate 2·04 per 1000. In the preceding ten-year period the admission rate was 59·2, and the death-rate 3·31 per 1000. A considerable reduction has thus taken place in both the admission and the death-rate, and the diminution has been pretty evenly distributed over the different sections of the Presidency. There were 7417 admissions and 349 deaths from hepatitis in the European Army of Madras during the years 1870 to 1879, an admission rate of 67·2 and a death-rate of 3·31 per 1000, much higher rates than those for Bengal. During the immediately preceding ten-year period the admission rate from hepatitis was 70·2, so that very little diminution has taken place in the frequency of this disease. During the period 1870 to 1879 there were 4234 admissions and 177 deaths from hepatitis in the European army of the Bombay Presidency, the admission rate being 40·9 and the death-rate 1·71 per 1000, slightly less than the corresponding rate for Bengal. For the years 1863—69 the average admission rate from this disease in Bombay was 26·6 per 1000. Hepatitis thus seems to have been more prevalent of late in the Bombay Presidency, an experience opposed to that of Bengal and Madras." The eighteenth annual report of the Sanitary Commissioner-General of India for 1881 tells us that the admissions for hepatitis per 1000 men for that year were : Bengal 32, Madras 39, Bombay 29. The deaths per 1000 in the same period were : Bengal 1·64, Madras 1·54, Bombay 1·52 from the same cause. It further remarks that "of the chief diseases hepatitis was the only one which during 1881 yielded a higher death-rate than the preceding year—1·60 per 1000, against 1·34. The increase was, however, very trifling, and the admission rates are nearly identical. In Madras hepatic diseases in former years have prevailed to a greater extent than in the other

Presidencies. The returns during the last two years have been very favourable, compared with the preceding ten-year period. Also that after anaemia and general debility the chief causes of invaliding in the army of India were : hepatitis, 2·96 per 1000; dysentery and diarrhoea, 2·83; phthisis, 2·21." As a great proportion of the deaths recorded under hepatitis were probably due to liver abscess, it will be seen how large the experience of the disease is in India.

With reference to the relative proportion in which liver abscess and dysentery were coincident or combined, Dr. Waring, in 1854, made the following notes :

Of 300 cases of fatal liver abscess in India, in only 82 cases, or in 27·3 per cent., was the hepatitis preceded by symptoms of dysentery. Of the 300 cases, the number of abscesses was not stated in 12. Of the remaining 288, 177 had one abscess, 33 had two abscesses, 11 had three, 17 had four, 10 had from five to ten or more, and 40 had more than ten.

*Relative Frequency of Hepatitis in different Foreign Stations  
(Fayrer, Tropical Diseases.)*

MADRAS.

Years.	Strength.	Disease.	Admitted.	Died.	Invalidated.
1870	9,936	Hepatitis	635	41	131
1871	10,684	Hepatitis	713	41	58
1872	10,892	Hepatitis	586	5	70
—	—	Abscess	43	85	—

CHINA.

1870	546	Hepatitis	15	0	1
1871	516	Hepatitis	8	0	0
1872	789	Hepatitis	15	1	0
—	—	Abscess	1	1	—

CAPE AND ST. HELENA.

1870	2,441	Hepatitis	66	4	16
1871	2,473	Hepatitis	24	0	6
1872	2,484	Hepatitis	23	1	3

WEST INDIES.

1870	1,432	Hepatitis	2	0	0
1871	966	Hepatitis	12	0	0
1872	1,112	Hepatitis	2	—	2
—	—	Abscess	1	0	0

## CANADA.

1870	...	4,519	...	Hepatitis	...	10	...	0	...	0
1871	...	2,383	...	Hepatitis	...	12	...	1	...	1
1872	...	1,602	...	Hepatitis	...	3	...	0	...	9

## MALTA.

1870	...	4,799	...	Hepatitis	...	26	...	5	...	6
1871	...	4,977	...	Hepatitis	...	26	...	2	...	7
1872	...	4,855	...	Hepatitis	...	27	...	0	...	4
—	...	—	...	Abscess	...	2	...	1	...	0

I will conclude what I have to say with a few remarks on the question of puncturing liver abscess. In cases of true pyæmic multiple abscess, even should the indications of the locality of these abscesses be clear, I fear no permanent benefit could be anticipated, though I think it is possible that if any one abscess caused much suffering the contents might be drawn off by an aspirating needle, and so temporary relief might be conferred. In cases where there is reason to believe that the abscess is single, and where bulging, pain, spasmodic contraction of the rectus, and tenderness on pressure exist, whilst previous symptoms suggest the presence of pus, the condition may be verified by introducing a needle and examining the fluid drawn off through it. If it be pus the sooner it is all removed the better, and if it lie too deep for a free incision, by reason of the danger of cutting through the vascular liver substance, then I recommend you to draw it off through a large cannula, and, having done so, introduce a drainage-tube, taking care to exclude the entry of air; wherever it is possible I advocate a free incision, and a free drain through a drainage-tube, and for cases in which the matter lies deep I have devised a grooved cannula, on which you can enlarge the opening, and having given exit to the pus, introduce the drainage-tube. I may here remark that a certain amount of vascular liver tissue may be cut through to get at an abscess; the haemorrhage will be profuse, but it will soon cease. I believe it is very essential that the antiseptic method of treatment should be strictly attended to, and you may perhaps remember a case which I had the honour of relating to you some time ago, in which it was attended with complete success. I advocate exploration to ascertain the presence of pus, early evacuation whenever it can be got at, and early and free opening; drainage, and antiseptic dressing whenever practicable.

CASE 1. *Dysentery and liver abscess opening through the right lung; recovery.*—A young civil officer, aged twenty-four, of good constitution and temperate habits, had been in India about three years and a half. When with the forces in Afghanistan, in November, 1881, he was attacked with erysipelas of the head and face whilst suffering from an attack of climatic fever. He was recovering from this at Sibi, when he was attacked with diarrhoea, which soon became dysentery. He was then sent off to Kurrachee, where he arrived early in January, 1882, and remained there under treatment. On January 23rd, having improved in health, he went to Kinari, on the coast, but on the 27th, again feeling ill, with great lassitude, depression, and pain in the side and shoulder, with loss of appetite and sickness (these symptoms supervened, it is to be observed, just as the dysenteric symptoms were subsiding), he returned to Kurrachee, and was again placed under active treatment. He had fever and a temperature of above 100°; exact degree not noted. On February 13th he was put on board a steamer and sailed for Bombay, where he arrived in three days, much improved by the sea voyage. On the 20th he left Bombay, crossed India by rail, and arrived at Monghyr on March 1st. During the month of March he had frequent recurrences of fever and pain, but contrived to do duty. Towards the end of the month he was seized one day, after riding twenty miles, with severe pain in the left side, which was attended with swelling. This was pronounced by the medical officer to be the result of a muscular strain, the consequence of a long ride on a rough, high-actioned horse. This pain and swelling subsided in about a week. He appears to have struggled on doing his duty as best he could until May, when great depression and utter inability to work came on. The medical officers reported his liver to be then much enlarged, and recommended that he should be sent to England at once. He, however, remained at Monghyr for some weeks. Towards the end of May he appears to have improved slightly, and so he continued till the middle of June, when sharp pain in the hepatic region, with difficulty of breathing, set in. A few days later, after dinner one day, a paroxysm of coughing set in, during which he brought up the contents of a liver abscess through the right lung. There were altogether five or six copious discharges of pus and blood by this channel, profuse at first, but diminishing with each attack. The last occurred on August 20th. On September 4th he left India, and arrived in England in due time greatly improved by the voyage. A week after arrival he got a chill, which brought on a return of the liver pain. He was again confined to bed, and had poultices and nitromuriatic acid. In October, being much better, he went to the south of England, and remained there till December 12th, when he had a relapse. In January the right lung and pleura became affected, but he recovered (he seems to have had no further discharge of pus from the cavity), and since then has gradually regained his health and strength. In April, beyond feeling weak, he was well, and there is every reason to believe that he may be able to return to his duty by the next cold season.

This case traces in an interesting manner the formation of a liver abscess and its relation to a previous attack of dysentery, which I am inclined to think was not of pyæmic character. It also gives a good idea of the difficulties and vicissitudes to which

a patient may be exposed in India, and the vast extent of country over which he may have to travel before he finds relief.

CASE 2. *Dysenteric multiple abscess of liver.*—G—, a Hindoo, aged twenty-four, was admitted August 7th, and died August 16th, 1880, at the Medical Hospital, Calcutta. Had diarrhoea and dysentery for a month; great pain over colon; fever; temperature ranging from 96·4° to 102·6°. Had passed sloughs with the gelatinous mucus and blood; no pain in the hepatic region. The post-mortem was made on August 17th, twelve hours after death. Refer to "Tropical Diseases," page 91, for description and for Mr. Doran's examination of the liver, which is now in the College of Surgeons.

Dr. NORMAN CHEVERS said that recovery was probably rare in cases of pyæmic abscess of the liver, but as the peritoneum was not extensively involved the symptoms might be masked. He had found that those cases of dysentery which did not benefit by ipecacuanha always had liver disease, and recalled a case in point where the liver was full of linear cicatrices, such as would result from the healing of multiple pyæmic abscesses. His general conclusions from the treatment of a large number of cases similar to that recorded by Sir J. Fayrer were, when heavy and severe pain comes on in the right side in dysentery or malaria, to exhibit moderate doses of ipecacuanha, a purgative if necessary, large mustard poultices, and then blisters. With such measures he never saw hepatic abscess develope. If the abscess result from the absorption of septic matter, with embolism or thrombosis, how was it relieved by ipecacuanha or counter-irritation? He thought the lesion began with congestion, and later thrombosis might occur. He referred to the case of a Bengal civilian, who was attacked by violent pain at the base of the right lung; pleurisy and pneumonia were diagnosed, and he died. On post-mortem examination a large solitary abscess was found, so old that its sac was cretaceous; ulceration had taken place around it and had caused the pulmonary inflammation. Another case was one of a fellow student of his at Guy's Hospital, of strumous aspect. He was attacked with agonising pain, but travelled a distance of two hundred miles; and some weeks later an abscess was evacuated through the lung. He expectorated almost pure bile. When he died only a pulmonary abscess was found.

Surgeon-General HUNTER thought it well to dissociate pyæmic abscess from tropical abscess. The former was a part of a general condition; the latter a local disease. The abscess might exist with symptoms of very minor importance. Dysentery might occur without abscess, and hepatic abscess without dysentery. Abscess of the liver in India occurred as follows:—The man had had malaria, or lived intemperately, or both. He got out of condition, lost flesh, had "hepatic" dyspepsia; then a localised swelling over the liver was noticed, and, if contracted, it might burst in one or other direction. The abscess might be single, more often multiple. He mentioned a case of severe abscesses in a man who had never had dysentery, and had been in Egypt six months, but had drunk hard. Exploratory puncture of the liver was harmless, and might give great relief. He did not like the aspirator for large superficial abscesses, but preferred a free opening with antiseptic drainage.

Dr. STEPHEN MACKENZIE supported Budd's view of the pyæmic causation of many hepatic abscesses, but in phthisis and typhoid fever abscess

of the liver was very rare, so that something more than ulceration of the intestine was required. Abscess of the liver might occur from (1) venous embolism from disease of the viscera opening into the portal vein; (2) in connection with disease of the hepatic area, as in head injury, as pointed out by Pott; (3) from arterial embolism; (4) suppurating hydatid; (5) from injury, very rare; (6) large abscesses, without any intestinal disease. He had seen several cases of liver abscess discharging through the lung; reddish pus was often expectorated for weeks and months; very often the patient died from the lung disease.

Dr. DREWITT said empyema was quite analogous to abscess of the liver in regard to treatment.

Dr. DYCE DUCKWORTH said that it was of great importance to regard closely the constitution and temperament of the people in whom this disease occurred. The personal element must not be left out of the question. Dr. Ewart had said that subjects of dysentery abroad would become tubercular in this country.

Dr. DICKSON had seen dysentery in many parts of the world, and amongst his cases had met with several of liver abscess. In China and in naval practice abscess was not common in cases of dysentery. On the coast of Africa and also on the Mediterranean abscess was rare, although malarial dysentery was common. Again, dysentery was common here two hundred years ago, but he thought that abscess had not been much noted. Dr. Ward thought that liver abscess and dysentery were results of the same cause.

Dr. SANDEERSON had had experience of native Indian troops only, and had not had many cases of liver abscess, but he had no opportunities for post-mortem examination on sepoys. Perhaps their immunity from abscess had some relation to their eating less animal food or drinking less alcohol than Europeans.

Dr. DOWSE referred to Dr. Hammond's cases of liver abscess in hypochondriasis in support of the existence of such abscess without symptoms.

Sir JOSEPH FAYBEE deferred his reply to some future occasion, on account of Dr. Cros' paper.

## THE GENERAL PRINCIPLES OF PLEXIMETRIC ORGANOGRAPHY.

By A. CROS, M.D., Paris.

WITHOUT having more complete theories or other means than the *differential induction* acquired by practice, I have for twenty-five years studied the facts in examining my patients with the pleximeter and tracing on their skin, bare or covered with a thin material, the organographic projections of which I have kept the facsimile. I believe that I am able to rectify some errors and to give some general principles indispensable for practice.

I will do this in the form of propositions.

I.—*By the percussion of the sides of a vessel containing some liquid it is impossible to determine the level-line of the liquid.*—It is an error to believe that by knocking against the sides of a cask we can exactly determine the level-line of the liquid. The transition from the full sound of the air above this level to the dulness of the liquid below is not clear and sudden; it takes place gradually in a space of about five inches, more or less according to the thickness and rigidity of the sides of the cask. A skilled person can mark the level-line in tracing it in the middle of the zone of the variations obtained. He generally makes an error of about two inches, because the sound shock is divided over the whole surface of the side of the cask in a diffuse manner. If the vessel is of metal or baked clay the sound is diffused in a system of curves according to the shape of the vessel and the quantity of the liquid contained in it, giving to percussion a character of uniformity equal in all the tested points. On the contrary, it is easy to find the exact level of a liquid contained in a leather receptacle or any other membranous vessel.

II.—*It is an error to believe that a hard body more or less elastic placed between the percussed body and the percussing one reinforces the sound produced by the shock.*—It is an error to believe that it is necessary for percussion to reinforce the sounds. It is sufficient to notice the differences from one place to the other when they are produced by changes of conditions. We must only admit that a hard body, applied let us say on a soft body nearly void of elasticity, will allow us *immediately* to elicit a note from the latter. This note would not be elicited directly from the shock of the soft body, for the characteristic of soft bodies is to deaden the shock. In this case the action of the shock is superficial and so to say used up on the spot by the work of the molecular displacement it produces without putting in vibration either the total mass of the soft body or its deep parts. If the softness be absolute there is no sound. The sound of a metallic ball penetrating a mass of clay would be feeble enough to realise this fact.

*There is absolute dulness.*—A soft body percussed through a hard body would not only vibrate *feebley* but tend to prevent the vibrations of the interposed body, if the adaptation of the two surfaces be close enough. *There may be dulness which is not absolute*—every substance has a certain degree of elasticity, the elasticity of which has to be

considered. We find in the organism hard bodies, the bones; and liquids, the blood in the ventricles of the heart.

Liquids give the greatest dulness; especially if they contain gases in solution, as Piorry remarked. Everything else in the organism is soft but more or less elastic, and gives to percussion numberless differences in sound, tone, intensity, perceptible to hearing, and corresponding tactile impressions at least as numerous or diverse.

III.—*It is a very common error to believe that in mediate percussion the auditory sense bears the principal part.*—Notwithstanding the importance of the auditory phenomena produced by percussion they must be considered as accessory or auxiliary compared to the tactile phenomena. The latter give very clear perceptions not only connected with the body struck, but also with other subjacent structures in diverse depths. We cannot say that the differences of acoustic perception do not accompany the differences of tactile perceptions, but for deep percussion these differences become more and more confused whilst tactile impressions remain distinct and clear, and can be used to mark points of delimitation.

IV.—*Percussion for delimitation is an exercise of mediate touch or touch at a distance.*—It represents a new extension to a distinct order of facts of one of the external senses of man. It is especially the *muscular sense or sense of resistance* which perceives the deep reactions of the shock.

V.—Bodies which are percussed are thus divided into two natural orders. In the same way that bodies are called *transparent* or *opaque*, speaking of luminous waves, *diathermic* or *adiathermic*, speaking of heat rays, we can call certain bodies *diaptic* (from διά and ἀντός) and others *adiaptic* according to their dispositions in transmitting or hindering the impressions of mediate tactility.

Example: A mass of clay can be considered absolutely *adiaptic*; shocks either immediately or meditately received are deadened in it and do not reveal the conditions of the objects conceded by it. The same thing takes place with all viscous bodies.

Solid bodies are *confusedly diaptic*, for the reason that the tactile impressions they produce remaining the same or nearly so, the acoustic phenomena resulting from their percussion are modified by the vicinity of other bodies in juxtaposition or subjacent. But in this case the impression produced on hearing is uniform so that no limit can be determined between two bodies of different structure, in

juxtaposition to each other and subjacent to the hard body through which we try to percuss them. In regard to organographic delimitation they would be entirely *adiaptic*. The spinal column, the sternum, and especially the ribs, are exceptions on account of their great elasticity and, especially in youth, of their comparative softness. Gases contained in a membranous envelope are absolutely *adiaptic*, firstly, because it is impossible to trace through them the least delimitation and also because the parts near the envelope that contains them do not modify in any way the characters of their sonority and elasticity. But if you compare two closed membranous cavities containing gases their relative size can be appreciated by the difference of tone. Of course, the lines where these cavities passing to the dull or less sonorous parts can always be distinguished.

Gases must be considered as entirely *adiaptic*. The most *diaptic* bodies we know at the present day belong to the human and animal organism: the lungs, liver, muscular texture, etc. Bodies of this kind composed of elements solid, elastic and disposed in more or less continuous alternations of liquids and gases are generally *diaptic*. One thickness or two of flannel or cloth, some linen, cotton or woollen cloth, or even a close knitted vest on the human body, opposes but a feeble obstacle to percussion. On the contrary a woollen vest knitted loosely and consequently holding much air in its texture will entirely prevent the action and re-action of the shock.

VI.—*A pleximetric slip* of ivory, metal, wood, hardened caoutchouc, or any substance of this kind *applied exactly and in the proper way on the external integument, and percussed on any point of its surface, transmits in all its extent to the subjacent organs the shock it receives*. To search the projectional limits of an organ or a lesion the pleximeter must be *narrow*, narrow enough to allow its transition from any one part to another of a different structure to be *immediately detected* by the tactile and acoustic reactions of the shock.

For this reason I proposed in 1860 a narrow rectangular pleximeter (12 millimetres by 5 centimetres) which can be used in every case.

In spite of the approbation given to it by the Paris Academy of Medicine, from the report of MM. Cruveilhier, Barth, Beau, and Piorry, the non-convinced practitioners continued to use the large elliptic pleximeter of Piorry (a good instrument for percussion

but bad for delimitation) and more frequently the fingers of the left hand, a bad pleximeter in every way. It was not understood that I was proposing, not a new pleximeter, but a new principle without which no exact dermographic projection can be obtained. We must add that good results can be obtained from instruments of different shapes if the essential conditions are observed.

VII.—*It is a mistake to believe that a large pleximeter can give good and combined results.*—If we percuss the lung or the liver over the most accessible parts, the effects of the tactile or acoustic shock are the same with a wide or a narrow slip. But wide pleximeters have an inconvenience; the subdivision of the shock over the whole slip lessens the effect on each point it covers in proportion to its size. It is necessary to percuss gently in order to preserve to the percussing fingers their tactile delicacy, which is the most important point in percussion of delimitation.

VIII.—*It is a mistake to believe that the fore and middle fingers can be replaced by a hammer.*—The hammer annuls three-fourths of the plessimetric information obtained. The hammer might be used to teach to beginners the differences of sounds in different parts.

*It is an error to believe that the fore and middle fingers of the left hand can be used instead of a pleximeter.*—Piorry, who had adopted it, soon abandoned it, but he forgot to give two reasons for doing so, reasons which must be considered as peremptory.\*

1st. The finger has not the necessary rigidity and fixity, and the soft parts sliding on the hard parts of the phalanx, the shock is deviated, decomposed and transmitted in the shape of a fan. The results are the more confused if the spot to be examined is deep.

2nd. The finger has not the necessary solidity and elasticity, it deadens the shock, and prevents the exploration of deep parts. Expe-

\* Here are Piorry's ideas on this subject: "The finger *pleximeter* is perhaps the worst of all. A percussion plate ought to be of the same structure (in all its parts) everywhere; the finger is very different; this plate ought to be well supported; the length of the lever formed by the finger prevents it; it ought to be flat, smooth, and of equal thickness; the finger, on the contrary, is convex, and consequently of unequal thickness. The percussion plate must be thin to allow light percussion, the finger is thick; the plate must often be wide to prevent the sides of cavities from covering the instrument. The finger is not broad enough." We can see by this that Piorry, although acknowledging that our pleximeter excellent, is afraid that his own should be discarded. This, however, is impossible, and Piorry will still remain the inventor of the pleximeter. Ours is only an improvement on his, in view of delimitation.

riments on the dead subject have shown that a shock on the finger reaches only four centimetres and one of equal intensity on a narrow pleximeter reaches twenty centimetres. An example will show the truth of this theory. A lady was suffering from pneumonia and pleurisy in very complex circumstances, she had in the left side of the chest a purulent cavity communicating ; freely with the bronchi, and she expectorated several times a day a large quantity of foetid matter. M. Apostoli, a celebrated gynæcologist, and Dr. Marchand, surgeon of the Hospital, were called. They examined her carefully ; she was not tuberculous, both apices before and behind were free and sonorous. Neither her antecedents, the hereditary conditions or the aspect of the patient allowed any thought of pulmonary phthisis. It was of the greatest interest to find the pyogenic cavity. The lung was carefully examined by auscultation and digital percussion. Auscultation gave no useful indications, percussion showed a large patch of dulness at the base of the left lung near the posterior and lateral regions. The place was punctured without result with the exploring needle. I was then consulted and percussed on my middle finger without much result, the finger pleximeter not giving sufficiently precise indications. I used then the slip-pleximeter and discovered a dull place on a level with the angle of the scapula, it was from  $\frac{4}{5}$  to  $4\frac{1}{2}$  inches, from the dull place previously found. With the help of tactile percussion I discovered that the part of the cavity nearest to the thoracic wall was the centre of the dull place and was at  $2\frac{1}{2}$  or 3 inches deep. The needle was inserted here and the matter came out abundantly. The patient recovered.

It remains now to point out the way of obtaining exact projections of internal organs and tracing them with the dermographic pencil.

1st. Use a small, rectangular pleximeter about  $\frac{1}{4}$  inch in width, 2 inches in length and  $\frac{1}{16}$  of an inch thick, with fixed or moveable ends, like my ivory slip of 1860, or any other instrument possessing the same essential conditions.\* A small wooden slip can also be used, but it must be much thicker than the ivory slip, so that it may be taken hold of between the thumb and middle finger.

2nd. Place the patient on the edge of the bed. A standing posture when possible is the best.

\* Dr. Sansom's pleximeter possesses nearly all these conditions, and presents special advantages for the delimitation of pulmonary cavities.

3rd. Rest the pleximeter with a certain force on the place to be explored, hold it between the ends of the thumb and middle finger of left hand, strike it with the three first fingers of the right hand the motion coming from the wrist only.

4th. Sometimes with first and second fingers, their extremities being united as if belonging to one finger.

5th. Do not trace beforehand leading lines, which often lead only to errors. The most summary notions of splanchnology are sufficient to direct the explorer. But it is necessary to avoid taking anatomic or cadaveric splanchnology for an absolute guide. Organic connections during life differ from those observed in a dead body; one of the weakest points of descriptive anatomy is the mental reconstruction of living realities. The heart of a living body is more voluminous and more round than that of a dead body; it is differently situated. The stomach also has a different form, &c.

6th. To trace limits one must go from *the sonorous to the dull, from undetermined figures to determined ones.*

7th. Obtain combined delimitation before specialising.

8th. Suit the intensity of the shock to the depth of the place examined; take into account in percussing organic objects the resonance which might modify its diverse parts.

9th. Traced points will determine nearly of themselves the lines of delimitation. The interpretation of these projectional lines will be easily made if looked at in their combined correlations.

10th. *It is essential* not to interpret *during* the tracing but only *after* having traced the successive points. To see in the obtained lines *projections* only and not the objects themselves. Examples: the projections of the heart, of its constituent parts, of its lesions, obtained on almost plane surfaces can give immediately a clear and precise idea of the real dimensions which correspond to them. The percussion of tumours situated in the bottom of the pelvis gives on the convex surface of the abdomen sometimes enormously enlarged projections. These facts are easy to understand, they belong to the most elementary physical and geometrical notions, which are well known but often forgotten in practice.

*It is important to account*, even with the best pleximeter, for the inevitable diffusion of the shock, especially in examining deep parts; also for certain deviations when percussing a part through one or two other parts of different structure. These are true *pleximetric refractions.*

11th. Trace carefully on translucent paper the organographic figures obtained to keep the traces of pathological changes.

The study of *differences* and *analogies* will light up a thousand obscure points in pathology. It will be admitted, we hope, in a short time, that nothing is more indispensable than following step by step in this manner the evolutions of morbid changes, either natural or modified by treatment.

12th. Compare the combined organographical facts, class them, and divide them in series. Even though *pleximetric organography* is only an accessory means to diagnosis, it is a great method breaking the too narrow circle of insufficient nosological classifications and showing in their reality the principal organic conditions either normal or pathological.



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